THE FARMER'S ADVOCATE

AND HOME MAGAZINE.

VOL. XV. LONDON, ONT., AUGUST, 1880. NO. 8.

REGISTERED IN ACCORDANCE WITH THE COPYRIGHT ACT OF 1875.

THE EXHIBITION NUMBER

—OF THE—

Farmer's Advocate

AND HOME MAGAZINE

FOR 1880

WILL BE ISSUED ON OR ABOUT THE TENTH SEPTEMBER NEXT.

60,000 Copies to be Issued.

Our fourth annual issue of this fast increasing and most successful advertising medium will be the best one ever issued. While thanking our patrons of former years, and the patrons of the ADVOCATE, for their confidence in our endeavors to promote their interests, we can assure them that our endeavors will not be relaxed, and that the increased facilities now in our hands will be used to the utmost for their benefit.

The circulation will be carefully divided among the leading farmers throughout the Dominion.

Prospectuses are now ready, and space can be reserved.

☞ Send for a Circular at once.

Our Prize Essays.

A prize of Five Dollars will be given for the best essay on the "Management of Agricultural Exhibitions." The essay which contains the most practical hints on improving their utility and practical efficiency will be awarded the prize. We will allow all to compete for this prize, whether subscribers or not. The essay must be in our office by the 15th of August.

Competitors must write on one side of the paper only. The essay receiving the prize is to be the property of this journal. Unsuccessful essays will be returned on request by sending stamps for return postage.

The Month.

Another month has passed by and it has been a busy, and in some cases an anxious one, to the farmer. The winter wheat crop throughout Ontario is now pretty well secured, and in some cases the barley as well. The weather has been somewhat uncertain, causing many farmers to be rather hasty housing their grain, and others who were not careful in binding and shocking-up close after the machine have suffered more or less damage. Still, on the whole, there is no real cause of complaint.

In Ontario and Prince Edward Island the hay and grain crop is heavier than in Nova Scotia, New Brunswick or the eastern portion of Quebec.

In the midland counties of Ontario the spring wheat promises a fair crop, while in the west it is hardly worth cutting.

The barley crop is good.

The acreage sown in peas is not as large as usual, but the crop looks exceedingly promising, and where there are no bugs the yield will be heavy.

Oats are a very heavy crop nearly everywhere in Ontario.

The live stock trade between Canada and England is showing a marked development; the shipments to Liverpool in June, 1880, being about double that of June, 1879.

Root crops of all kinds are above the average of previous years. Pass the scuffler frequently through the rows, keeping the surface mellow.

After the early crops are removed rye or rape may be sown with profit for fall feed. As soon as the crops are removed the land should be worked thoroughly; if this can be done during the hot dry weather which generally occurs from the middle of August until the middle of September, good results will be obtained.

Potatoes are better harvested as soon as ripe, which may be told by their tops dying down.

In marketing fruit care should be taken to pick the fruit without bruising. Sort carefully, putting each grade by itself—3 grades should be made. More permanent profit will be derived than by selling in an unassorted mass. In picking fruit care should be taken not to to injure the tree; no picker should be allowed to climb about in a tree with heavy nailed boots Pick from stands or ladders if you can, but if you must get up in the tree it is better to wear rubbers

The worms of the codling moth are in the windfall apples now; pick all up and feed to stock.

Hurry up the threshing and roll the grain in to market, now the price is good. Early prices are likely to be the best.

Which is the best kind of winter wheat to sow, will be again asked. Sow that variety that thrives best in your locality. Each kind has advantages and disadvantages. We will give particulars in next issue.

Our regular subscribers are freely invited to send for as many copies of the Exhibition number as they may be willing to distribute among those who are interested in rural affairs. All our friends who are satisfied with the efforts we have made to please and instruct them, are solicited to aid us, through this Fair number, in so extending our circulation that further improvements may be inaugurated and sustained during 1881.

Any subscriber may become our agent.

Postmasters are requested to act as our agents.

A cash commission of twenty-five cents will be allowed for each *new* subscriber paid for one year, sent in singly. Increased commission for ten new subscribers and over.

Our new premium list will appear shortly, and will be found liberal and attractive.

One name or a dozen may be forwarded at any time. Subscriptions can commence with any number of the ADVOCATE.

Home Again.

We have just returned from a rapid tour of six weeks through Quebec and the Maritime Provinces. We have taken this journey for the purpose of learning more about our sister provinces and their agricultural resources and requirements, so that we may be enabled to impart more suitable information to them and about them. We believe we have gained much information from them that will be of benefit to our readers in Ontario and in our west and north-west provinces. It would fill a volume to impart to you even half of what we deem would be of interest and importance for you all to know, but we hope in future numbers to impart much that will be interesting and valuable to every reader in any province of the union. We have met with very courteous, kind and generous treatment from all the editors and leading farmers we have met. We return our sincere thanks to those that have shown us such great kindness. Steamboats, sailing craft, railways and horses and carriages have been placed freely at our disposal —almost always unsolicited—to enable us to see the different parts we visited. We have used 10 different lines of railroads, 9 steamboats, 1 sailing craft, 12 rowing boats, and 23 private carriages, besides a host of street cars, omnibuses, cabs, &c.

There are numerous invitations in many of the Provinces that we have not been able to accept. We know any reasonable person who has invited us, and many besides whom we would fain have called on, will pardon our inability to visit them more, but we hope to be able to take another flight some day. When on the wing we generally fly swiftly and call unexpectedly, and in every agricultural locality we are pleased to find lots of friends.

A gentleman experimented with peas in this way:—He saved at the time of picking all the early full pods as they ripened, and planted the seeds saved from these pods year after year, for three years, and the fourth year had peas of the same name, that were more than two weeks earlier than the seed of the same name purchased in the store. Seeds of cabbage, lettuce, tomato, cucumber, peas, corn and many others can be much improved by the some care.

THE ARMY WORM IN NEW BRUNSWICK.—The Maritime Farmer says there are alarming accounts from a number of the farmers of Sunbury and Queens of the ravages of a new enemy—the Army Worm. Their depredations as yet have been along the river at intervals, and though they have been at work but a short time, already hundreds of tons of hay have been destroyed by them.

Something new in Canadian exports to Great Britain is baled hay. Large quantities have been exported to the United States for several years past, but this is the first year that any has been sent elsewhere. Over 180 tons have already been despatched by two of the Allans' sailing ships from Montreal, and some 200 tons more are now being loaded at the same port.

English Letter, No. 16.

[FROM OUR OWN CORRESPONDENT.]

Liverpool, July 5.

I have just returned from a few days' ramble in the Midlands, and I must say I have never seen the farmers in better heart. No doubt this is to some extent the natural reaction from the depression of the last few years. Their jubilation, however, is certainly justified by the appearance of things. The crops are all in brilliant promise. The rains of the early part of June and the subsequently timely showers have given the grass a body and a heart which promises an abundant crop of excellent hay. The same moisture has placed all the grain crops beyond fear of drought, and they are everywhere looking superb. The rain also came in the nick of time to save the turnips from the fly, and to give peas, beans and all garden crops a substantial turn for the better. The reports about the fruit crops are contradictory; but from what I saw, I should say there will be a good market for all you will have to spare. The very cold and excessively dry flowering and setting time was not favorable for fruits of any kind, and generally they will be thin.

Another cause why the English farmers smile again is the evident disposition of the new Government to help them. My farming friends in the Midlands are in a strictly preserved district, and they complain bitterly of the depredations of hares and rabbits, which are as plentiful as blackberries. There seems to be some doubt about how the Act giving farmers an equal right with their landlords in the four-footed game will work; but it is clear that if landlords are to preserve to themselves and friends the right of killing hares and rabbits, they will have to pay their tenants a substantial consideration. The malt tax abolition will enable farmers to malt their inferior barley for feeding purposes, and to very many this will be a substantial gain. One of my first professional experiences—more years ago than I care to reckon up—was the attending meetings of farmers to agitate for the repeal of the malt tax. If the benefit the repeal does them is at all proportionate to the trouble they have had in getting it, their gain will be substantial.

It is a somewhat singular commentary on the trade depression in this country that the bankruptcy returns for the past half-year show that failures are only about half, in proportion, to what they were last year, and very few farmers figure in the list. There seems to be a general impression amongst Canadians and Americans that the old country is getting used up. It would be well for them to remember that she will take a great deal of using up, and that she has resources and reserves of wealth which place her far away from that verge of prostration and starvation which so many people on the other side of the Atlantic seem to think is her immediate fate.

I notice that several of your prominent cattle importers are here, noticeable among them being Messrs. Wiser, of Prescott, and Walker, of Windsor, Ontario. The latter gentleman, I understand, is busy seeing what can be done here to improve the market for Canadian malt and barley. It may be remarked that Messrs. Walker, who do their cattle shipping business direct through Messrs. George Roddick and J. Gibbons, cattle salesmen, of this town, have studied thoroughly the kind and condition of cattle required in this market, and, as a result, their consignments always meet a ready sale and good prices.

A few lots of Canadian horses have arrived here, but the majority of these have been despatched to Paris; and I understand that a contract has been made to deliver from 12 to 20 first-class Canadian carriage horses in Paris, weekly, during the season.

A number of tenant farmers' delegates, including Mr. Booth, the celebrated Short-horn breeder, leave this port on the 22nd of this month for a tour through the Dominion. I learn that several of the delegates who went forward last year have purchased large tracts of land in Manitoba; and Messrs. Cowan and Gordon, in particular, accompanied by their wives, will pay a visit to the Prairie Province during the autumn.

I intend spending a few days at the Royal Agricultural Show at Carlisle, which opens ou the 10th inst., and I shall keep a weather eye open for anything that may be of interest for your readers. At any rate, I hope to find material for both a longer and more interesting letter next month. The Dominion, I understand, is to be represented by an exhibit of products forwarded by Mr. J. R. Craig, Secretary of the Ontario Agricultural Association, and also of grain, grasses, soil, &c., &c., from Manitoba. Provision will also be made for a liberal distribution of printed matter relating to the Dominion and its resources. Too much cannot be done in this way; for your competitors over the boundary spare no efforts. During my late trip to the Midlands, I found people busy distributing pamphlets and cards relating to States lands in the markets and other places whare farmers most do congregate.

Bad State of Affairs in Kansas.

A Kansas correspondent of the Chicago Inter-Ocean says there will not be half a crop of small grain in that State, while much of the corn moulded in the ground, as there was not moisture enough to sprout it. On the 5th inst., the thermometer ranged from 102° to 107° in the shade, and the hot wind from the south, which lasted over five hours, burnt the top blades of all the corn to a crisp. Grasshoppers, potato beetles and chinch bugs swarm all over the State. The correspondent adds:—

"I was in Orleans, and saw over thirty teams with families going east, to find some place where they could get something for themselves and their stock to eat. They were the saddest looking lot of human beings that I ever saw, and had the poorest lot of horses. My heart ached for these poor women and children. Many of them, no doubt, left comfortable homes to come into this railroad and land-shark gloriously reported paradise—the last place on earth for a man to go and make a living by agriculture. They have spent their hard-earned money, and now return worse than paupers, for starvation has made its mark on many of them.

The above extract we think well deserving a space. From personal observation in Kansas and in many of the other too highly lauded localities that agents and deceivers advertise in printed and colored pamphlets, we would advise our readers to remain on their farms in Canada. Thousands have regretted the change, and thousands of Canadians have died from starvation, from disease and from broken spirits. Many have committed suicide when they have found their means of existence deceitfully taken from them. Do not be too hasty to leave the fine, healthy, productive soils of Canada, where you can at all times, and in all places, procure good water, a meal and a fire.

SALT THE OLD PASTURES.—A few years since I had an old pasture that had almost run out, covered with weeds and patched with moss. I mixed a few barrels of salt and wood ashes, and applied about two barrels of the mixture per acre, covering about half the lot. The result surprised me. Before fall the moss had nearly all disappeared, and the weeds were rapidly following suit, while the grass came in thick, assuming a dark green color, and made fine pasturage. The balance of the lot remained unproductive as before, but the following year was salted with like results.—[Ex.

Manuring Fruit Trees.

Many of the orchards through the country present a very unthrifty appearance, especially the older ones. In many cases the trees are infested with bark lice, and have the appearance of not being trimmed in any way for some time. This certainly is very unprofitable, especially where the land is valuable. The trees will not bear to any extent, and what little they do produce is of a very poor quality. Fruit trees, like everything else, are more or less profitable according to their treatment. To show the truth of this we give the experience of a farmer who writes to the Elmira Farmers' Club as follows:

"For the past twelve years my orchard has been pastured with sheep, and it has been their habit to resort to one place during the hot weather. The trees which the sheep have lain under and given more than their share of manure, have invariably borne good crops. It is evident that some trees are too highly manured, as the fruit rots and the foliage is too rank. Trees of 20 years' growth, where the sheep have lain, average 4 barrels, and those not manured 1 barrel; but there are some kinds, as the Twenty-oz. Newton Pippin and russets, that bear better without manure than any others. I think that the King, Baldwin and Holland Pippins require more feed than some others."

The members of the Club agreed with the following comments:

"I have practised manuring my orchard with barn-yard manure two years in succession, and then in the succeeding year I have applied lime and ashes. There may be better treatment, but I have found good results from this. I get good fruit, and at least fair crops."

"Liberal application of manure shows surprisingly in the improvement of old orchards. I have tried it, spreading the manure under the trees over a space as broad as the top cover, and the fruit has improved materially. It will do no hurt to spread manure all over the land, but it is important that it should be applied as far from the trunk as the roots extend, and that will certainly be as far as the branches reach."

"If we were restricted to any one kind of fertilizer for orchards, we would use unleached ashes. Whatever kind of manure is good to enrich land is good for trees, and if they are old enough to bear freely, it will increase their yield."

Authorities on the subject generally consider it a bad plan to allow an orchard to continue in grass for any lengthened period of time. No stock, with the exception of hogs, should be allowed to run in an orchard when in fruit. We have repeatedly lost sheep from this cause, as after a heavy wind or any cause which would shake the apples to the ground, they will eat too many, which will frequently prove fatal. A better plan is to pick up all valueless windfalls, etc., and feed in proper quantities to stock. To be profitable and handsome, as much careful attention must be given to an orchard as to any other portion of the farm.

The advantages arising from mulching fruit trees have been so often told that they need hardly be told again. It is generally known that fruit trees do not like the earth around them to become too hot, and that mulching, which is the placing of some material around the base of the tree, keeps the roots cool. A correspondent of the American Cultivator gives a remarkable instance of the benefits of mulching. He says, upon a dry and rocky hillside, in the town of Shrewsbury, Mass., stood an orchard. The trees were old and had not given a good crop of apples for several years. The owner having a large quantity of swale hay, drew it from the field and placed it around the trees to the depth of twelve inches, covering the whole ground occupied by the trees, omitting every alternate row. This was done in the month of July. The next year every tree, where the mulch was applied, was loaded with large and fair apples, while the trees had made a great growth of wood, and the leaves had a beautiful green and spring-like appearance, while those without the mulch bore no fruit at all. The varieties were the same.

Care of Lambs.

In our May number we gave the treatment lambs should receive as long as they remain with their dams. All lambs, except very late ones, should be removed from their dams the first of this month, and will need special care.

The first thing to be attended to is to remove the ewes and lambs as far apart as possible, that they may not be able to hear each other cry. The ewes should be put on a poor, dry pasture for a few days until the milk dries up, and it will be found of advantage to examine the ewes, and when necessary to milk them a few times at intervals for a few days. If this is neglected, inflammation or garget may attack some of the best milkers. After the milk has disappeared entirely the ewes should be put on a good, fresh pasture, and if this cannot be obtained, give them green food in racks, or anything that will cause them to lay on flesh and recruit their system after sucking. Those intended for breeders should not be excessively fat, but will be the better of being in *good* condition. The management of the lambs will depend on the manner in which the farmer means to dispose of them, but, at all events, the pasture should be very good, and they should be so fed that they will not miss their mothers' milk. A field of rape well grown would be excellent, but care must be taken for some days when they are first turned on. Do not let them stay too long, or they will gorge themselves and very likely die. At first they should not be allowed to feed on it when it is wet; the same may be said of clover. A great deal of caution needs to be exercised here to guard against over-gorging, at the same time the lamb must be so well fed that it will not dcline in flesh or grow less rapidly. At this time lambs may suffer from diarrhea, especially if high fed. Nothing need be done for them, except washing the hinder parts well with cold water, freeing them from all filth. This should be done frequently while the disease lasts, but if the beast looses any vigor, seem languid or sluggish, or the disease lasts more than twenty-four hours, danger is apparent.

Iu such cases a cordial is recommended by Mr. Youatt in his work on sheep, and is prepared as follows :—Take of prepared chalk one ounce, powdered catenach half an ounce, powdered ginger two drams, and powdered opium half a dram. Mix them with one-half pint of peppermint water. The dose is from one to two tablespoonfuls morning and night. Lambs that are to be kept for breeding purposes need not be forced, but should be kept thrifty ; but those which are intended for the show yards, for the butcher, or for sale, should be forced along as fast as possible. The lambs should now be examined, and if any ticks are found they should be destroyed.

How to Deal with Rats.

We clear our premises of these detestable vermin, writes a correspondent of the Scientific American, by making whitewash yellow with copperas and covering the stones and rafters in the cellar with it. In every crevice where a rat may tread we put the crystals of the copperas and scatter the same in the corners of the floor. The result was a perfect stampede of rats and mice. Since that time not a footfall of either rats or mice have been heard about the house. Every spring a coat of yellow wash is given the cellar as a purifier and rat exterminator, and no typhoid, dysentery or fever attacks the family. Many persons deliberately attract all the rats in the neighborhood by leaving fruits and vegetables uncovered in the cellar, and sometimes even the soap is left open for their regalement. Cover up everything eatable in the cellar and pantry and you will soon have them out. These precautions, joined to the service of a good cat, will prove as good a rat exterminator as the chemist can provide. We never allow rats to be poisoned in our dwelling, they are so liable to die between the walls and produce much annoyance.

Hundreds of Cattle Dead.

THE FARMERS DO NOT KNOW THE CAUSE OF THE DISEASE—NO CURE AS YET KNOWN.

(For description of disease see January No. of this year.)

July — Arrived at Pictou and went to see the President of the Agricultural Society, Mr. D. Mathewson. He appointed a time to take us for a drive in the country. As we drove out of the town we called at Mr. Foot's residence. Mr. Mathewson enquired of him how many animals he had lost from the disease. He said fifteen. "There is a cow that has it now," he said, pointing to a good healthy-looking cow. The cow appeared to us healthy; her nose was damp, her coat sleek, and she was in good, fair condition. We asked the owner how he knew she was unwell. He replied : "By the color of the eye and by her milk; we always know the symptoms by the milk first. ' He ordered some milk to be taken from her. We smelt it, but could not notice anything particular about it; but he said that by adding a little warm water we would soon find it out. A little warm water was then poured into the milk, and the most nauseous smell arose therefrom; it was extremely sickening, and immediately set us retching almost to vomiting. Mr. Foot said he expected her to die, as nearly every beast dies that is affected in this manner; everything had been done that could be devised, and yet the animals would die. He believed the disease to be contagious, and said it was spreading, although it had been in existence in that locality for 23 years. He thought it was imported by a tanner who brought hides from South America 23 years ago, as the first beast that died was near that tannery.

We next called on Mr. Campbell, about a quarter of a mile distant. He had a cow lying in a shed; she had not been on her feet for three days. He said he had paid $60 for her; she was a pure Ayrshire. He had already expended $5 on her, and being sure she would die, he would do no more for her. He said he had lost 20 head, and the disease was ruining him.

We next went to Mr. Fraser's, the Vice-President of the Agricultural Society. He has a fine farm, but he had lost all the horned animals he had on his farm; he had replaced them, and now his animals appeared healthy.

We were pointed out the late residence of the person who was said to have been the most energetic and persevering farmer in that part of the country. We were informed that the continued losses of his stock by this disease had ruined him, and caused his death.

So numerous were the outbursts of this unknown disease that we deemed it our duty to inform the Governments of Nova Scotia and of the Dominion. The local authorities appear to have no power to act in such instances. We tried drugs on one of the cows, but have not heard the result.

We next went to New Glasgow, where the only legal veterinary in that part of the country resides. On enquiring of him he said that a man called on him that morning to go and attend six cows that were sick, two having died; but the veterinary informed us that he was not going to see the cows, that they were sure to die. He said that the disease was caused by the farmers letting their cattle get too poor in the winter, and then having a sudden change to abundance of food. This reply we did not think consistent with reason, as we have never seen or heard of any cattle acting in such a manner, and numerous farmers attend their stock worse than these farmers have attended to theirs.

At Truro we met Col. W. Blair, M. P. P., and President of the Agricultural Society at that place. He informed us he had heard that Mr. David Lynds, of Salmon River, had lost within the past week five cows, one ox, two three-year old steers, one horse and one hog, all from the same disease. This we telegraphed to the Minister of Agriculture at Ottawa, adding : "See particulars of disease in January No. of FARMER'S ADVOCATE," to which our readers can also refer for full description. We received the following reply : "Telegram received; investigation ordered."

At Pictou we walked over the pastures and inspected the water. There were many mineral substances found in the land, and the water was impregnated with mineral matter. We collected samples of the minerals, soil and water, and sent them to Ottawa for analysis, and to be returned to us. Mr. McEachran, of Montreal, has been instructed to investigate the cause of the disease. Our impression is that it is caused by mineral poison, as we find the water bad. We think that the farmers who have suffered from these losses should be relieved from taxation for some time, or in some way encouraged, especially those who have suffered since the publication of the existence of the disease, as they have done everything in their power and all that the Government Veterinary could suggest, but to no purpose. We, and indeed any farmer, must feel for those who have lost their stock, whatever may be the origin or the cause of the disease.

Our veterinary surgeons, Messrs. Rudd & Tennant, of this city, informs us that it is Anthrax, or Blood Poisoning. We have not yet received the official report from Mr. McEachran.

Fall Wheat.

Wheat is the staple crop of our Ontario farms especially. A good crop of wheat brings in more money in return for labor and expenses than any other crop. Breadstuffs are always in demand in the market, even if crops be abundant and the price of all agricultural produce low. All other operations on the farm are, by a proper rotation in farming, directed to the producing good crops of wheat, and they can, by good cultivation, be at all times obtained, unless under exceptional adverse circumstances.

The favorable reports of the fall wheat now saved, will, no doubt, produce the usual result, the sowing a greatly increased acreage with this crop this season ; and much of it we fear on land so badly prepared, and some of it, perhaps, lacking the requisite elements to produce a good return, that we may dread light crops the ensuing harvest, and light crops, of course, imply light profits.

Experience has proved that the best preparation for fall wheat is a well prepared summer follow, and especially so on heavy soil, rich in lime and phosphates. Lime in some form is necessary to the growth of a good crop of wheat. When deficient in the soil it should be applied, spreading it on the land and harrowing it in just before sowing the wheat. A light dressing, even twenty bushels per acre will make a great improvement in the crop ; or superphosphate, from 100 to 200 pounds to the acre, would be very beneficial.

The seed bed should not be too lose and fine, as is too often the case. If too loose the heavy fall rains will compress the soil and the growth of the plant will be impeded. Wheat always succeeds better in a tolerably compact soil that is not too loose. It does better if the surface be somewhat rough and cloddy. The clods will crumble down from the action of frost and rain, and they will help to prevent the heaving of the roots, from which many wheat plants are winter-killed.

In order to have the land in the best condition for wheat, it should be plowed deep for the pre-

vious crop the previous fall, and then cross-plowed to the depth of not more than six inches, and the wheat drilled in without harrowing.

The land on which fall wheat is to be sown should be free from any liability to retain surface water. This is of the greatest importance. The freezing of surface water is the greatest cause of fall wheat being winter-killed. If the land be free from water, and otherwise in good condition, there is little danger of the wheat plant being killed by frost. If the land be not underdrained or naturally dry, it is necessary to make open furrows to prevent water lying on or in the soil, and the earth thrown out of the soil, scattered evenly with a shovel.

The proper time for sowing depends on circumstances. Early sowing has produced heavy crops. When wheat was sown the last fortnight in August or the first week in September, the roots had firm hold of the soil, and the abundant vegetation served to shelter them from the winter-killing. There was, it seems, somewhat besides early sowing in its favor. The land was not then so denuded of all shelter, and the fertility of the virgin soil was not exhausted. The early sowing on well prepared soil, however, was a good protection. But there is now great risk in early sowing. The early sown wheat is apt to suffer most from the attacks of the Hessian fly and the wire worm; so of two evils we choose the least dangerous, and as a protection from the insects sow as late as possible.

Caution!

This ominous word it is again our duty to repeat. The danger of infection from the cattle of the United States still exists. When we first gave the alarm of the impending danger of pleuro-pneumonia, so dangerously near to our country, some journalists and others—Canadians—were quite indignant at our action, and went so far as to say there was no ground for our note of warning. In justification of the action we then took, as well as to warn our stock-feeders and the Government, now again we direct attention to the report of Dr. Lynam to the U. S. Commissioner of Agriculture, relative to the course of this disease in New York State, which we abridge from the American Dairyman of July 22, 1880.

Putman County.—On the line of the Harlem railroad there have been lately slaughtered 176 animals. Of these 40 were acute cases. The others, having been exposed to the contagion, were killed to prevent the spreading of the disease. In the town of Kent is an infected herd of 60 head of cows, steers and calves in quarantine.

Westchester County.—A herd of 27 head have been reduced by the ravages of the disease to eight animals. Of a herd of 11 animals, 2 have been killed. Another herd of 12 has been infested. In another herd 1 is infected. Mr. Butler, of his herd of 50 animals, has lost the entire herd, with one exception.

New York City.—There are believed to be but 5 infected stables left. These are in quarantine and their locality is given.

Long Island.—The infected district includss Brooklyn, New Utrecht, Flatbush, Gravesend, Flatlands and New Lots in King's County, and Long Island, Newton, Jamaica, Flushing and Crindmoor in Queen's County.

Dr. Lynam relates his inspection of several diseased animals in New York, Brooklyn, Fremont, and Croton Falls, all showing conclusively that the disease has obtained a firm foothold in that wide region, notwithstanding the most strenuous efforts to stamp it out. Frequently when a herd is found to be infected, the animals are sold to butchers, as for instance in the case of Mr. Sprague's herd in Kent County. The herd consisted of fifty-three animals, and were sold by the State Commission to butchers, when they were known to be infected, at an average of $6 per head. Three of the animals were considered too badly diseased for beef, and on being killed showed well marked lesions of the disease in its different stages. The herd was infected by a cow purchased from a dealer. There is no longer any attempt made to deny that the disease is of a most dangerously contagious character.

Farmers! have we not done our duty in giving you the earliest warning of pleuro-pneumonia, foot and mouth disease, hog cholera and trichinæ, that were threatening from across the border to invade your country and destroy your herds and flocks? They who strove to conceal the danger, and they who did not take proper measures to prevent its inroad, deserve the severest censure.

Veterinary.

Poisonous Fodder, Grass Staggers, &c.

BY JAMES LAW, F. R. C. V. S.
(Professor of Veterinary Science, Cornell University.)

At the season when the grasses ripen it is no uncommon thing for horses and cattle alike to be attacked with a form of paralysis which cannot be overcome until the victims are changed to an altogether different kind of aliment. Horses become sluggish, dull, spiritless, with irregular digestion and flatulence, and soon show lack of nervous power by swaying and staggering, by falling asleep when eating or drinking, or by standing drowsily with semi-closed eyelids and head resting on the manger, ready to drop when suddenly startled. This nervous torpor may go on to active delirium, when in paroxysms of violence the horse pushes his head against the wall in front, lifts his legs alternately as if walking or trotting, trembles violently, or dashes himself recklessly against the walls of his stall or box. Cattle show weakness in their hind limbs, sway from side to side, or even drop when walking, or they show the same stupor and drowsiness spoken of in the horse, lie upon their left side with the head turned round and resting in the flank, and the eyes semi-closed, but red and with dilated pupils when the lids are drawn apart. The horns and ears are usually hot, and the bowels confined, though there may be at first some temporary scouring. In them, as in the horse, the disease is apt to go on to active inflammation of the brain, the animal becomes restless and wanders forward in a straight line or around in a circle, regardless of obstacles or dangers, sometimes quiet but at other times violent, bellowing loudly and as if terrified, dashing against doors or walls, or headlong into pits or over precipices, and killing themselves in such unconscious efforts.

While disorders of the brain are caused by many conditions of disorder of the stomach, and notably in cattle by lead-poisoning, yet this form of disease at this season of the year is mostly due to poisons present in the seeds of certain fodder plants when approaching the period of ripening. Among fodder plants that are specially noxious in this respect, the family of Rye Grass is to be particularly noted. One of this family, the *Lolium temulentum*, Intoxicating Rye Grass, or Darnel, had a bad reputation as early as the time of Christ, and derives its modern name from the poisonous properties of its seeds. In modern times its poisonous element has been extracted from the seeds by Boillet and Filhol, in the form of a yellowish fat, which proved an active poison to dogs, cats and rabbits, somewhat less potent on horses, and least so, though still poisonous to cattle, sheep, pigs, hens and ducks. The symptoms were mainly those of stupidity, loss of muscular power (lying down, swaying, staggering, etc.), paralysis, blindness, convulsions and death. This is typical of the poisonous properties of the various forms of Rye Grass, but it is only an exaggerated type, and by no means the only member of this family that demands care. Perennial Rye Grass (*Lolium perenne*) and Italian Rye Grass (*L. Italicum*) are also liable to produce these disorders when they are allowed to run to seed, and are fed to stock when partially ripened and yet not fully matured. Where pastures containing one or other of the rye grass family are allowed to grow up until the stock can crop the partially ripened spikes of grass, it is no uncommon thing to find the whole of the herd at once attacked by some form of paralysis, with drowsiness or delirium, which goes on increasing so long as they are left on the pasture.

The proper course in such circumstances is to change the food at once to a bare or short pasture, or to sound grain and hay indoors, and to give each animal a dose of physic of double the usual strength. (For a horse, 8 or 10 drachms of aloes, or 1½ quarts raw linseed oil. For a cow, 2 pounds of Epsom salts, 1 oz. ginger, and 20 drops Croton oil.) Cold water to the head, blisters to the back or loins, and mild diuretics may be necessary to complete a cure, but the main object has been accomplished when the food has been changed, and all offensive matters present in the stomach and bowels have been cleared away by a purgative.

But what is far more important is the prevention of such attacks, and this may be secured, even when rye grass is used for pastures and meadows, by keeping them so fully stocked that the grasses are not allowed to run to seed, or to cut the grass or hay while still green and before any seed has been formed.

Among other grasses which prove hurtful when allowed to run to seed are Millet, Hungarian Grass, *Stipd Sibrica* (a variety of feather grass), the short awned barley and the red oat, but in none of these has any poisonous principle been separated in an active form, and in the three last it seems certain that the injury is due to the hard barbs or awns which protrude and irritate the mucous membrane of the stomach.

This injury by mechanical irritation is occasionally seen in other conditions. Thus horse-tails (*Equiseta*) growing in low damp meadows, and containing an excess of silica, are sometimes mixed with hay to such an extent that they produce much irritation of the stomach, and induce a sympathetic brain disease and paralysis. Setting aside these last it will be evident that the danger from the grasses referred to, like that from the rye grasses, is connected with their running to seed, and to have the proper measure of prevention in all cases alike is to keep stock off pastures that have gone to seed, or to cut down the overgrown portions, and in the case of hay to cut it early and green.

In addition to the above may be mentioned the seeds of the Leguminosa, and especially tares and vetches, as occasionally injurious. The family of Leguminosa, like that of the rye grasses, are liable to suspicion of harboring a poisonous principle, which is not developed in all climates and at all stages of growth, but which is often most injurious in its effects. The Chick Vetch, in India, produces extensive paralysis among the human population as well as in brutes, wherever it is used in the proportion of more than one twelfth of the food. In the horse it produces roaring or local paralysis of the limbs, and these results have been noticed in Europe as well as in Hindostan. Here, there is evidently a poisonous principle as in the rye grass, yet this seems to be especially potent at an early stage of ripeness, and some say this vetch may be safely used as a forage plant if cut before the seeds are formed. Again, if fully ripened, most other vetches are quite safe, though they often cause indigestion, disorder and brain disease when only half ripe.

Another prominent cause of digestive trouble and brain disease is the ergot of grasses and the smut of wheat and Indian corn. These may induce constipation, indigestion, emaciation, extreme lethargy and listlessness, palsy or even delirium and convulsions; but here, again, it is remarkable that the danger attaches mainly to the partially or fully ripened plant. As in the case of the grasses and vetches the poisonous principle is only developed in connection with the formation of the seed, so in the case of these fungi they only grow on the fruit. If, therefore, sowed corn is cut before the formation of seed, its danger is greatly lessened, and on the other hand it is enhanced when the animals are fed dried cornstalks, or light, unfilled ears of corn, liable to be affected with the smut.

Agriculture.

Agricultural Commission.

Since our last issue this Commission has sat in Guelph and London, and we present to our readers, in an abridged state, much useful information, given as evidence by practical men, whom the Commission had requested to attend their meetings.

Guelph, July 13.—According to previous arrangements the Ontario Agricultural Commission, represented by Messrs. Whitelaw, Dymond and Brown, met here for the purpose of hearing the evidence of some of the leading farmers and stock breeders in the district surrounding the city. Mr. Whitelaw presided.

Mr. Thos. McCrae was the first witness. He said he had a practical acquaintance with the Galloway cattle for forty-five years, and he believed they were well fitted for crossing with the common stock of the country for the production of good beef; there was no hardier animal unless the West Highlander, and for early maturity they were very nearly equal and for feeding and vigor they were superior to the Durhams. A Galloway grade at three years old, if well fed, would reach from 1,600 to 1,700 pounds weight. He had now five three-year-old Galloway steers for which he had been offered $100 each after feeding them six months. They were not especially distinguished for their milking qualities, although he had known some exceptional animals among them which were excellent milkers. A Galloway would command a higher price in England than a Durham, weight for weight. A Durham bull on the Galloway cow made an excellent cross to feed for beef; in the winter, until the month of April, he fed his Galloways only on straw and turnips, and in the summer he put them out to pasture. A Galloway steer could be brought to the weight of 1,500 lbs. at one-fourth less expense than a Durham. At three years old the Durham would exceed the others in weight by about 100 or 150 pounds. There were so few Galloway grades offered for sale in Canada for the English market that shippers could not obtain enough to enable them to tell whether they would get more for them in England than for the Durham grades. The Galloways were excellent, sure breeders; in eighteen years he had only had one heifer that failed to breed, and only one calf that died before coming to maturity; they would stand the voyage across the Atlantic much better than the Durhams, and arrive on the other side in better condition. He was very fond of the Galloways; he recommended them as particularly well adapted, by their hardy qualities, for the rougher parts of the Province; he had raised some good steers from a Galloway bull on native cows, and had sold them at an equal price to that paid for Durhams; the Galloways were better milkers than Shorthorns, though not so good as the Ayrshires; he had a Galloway cow which, after being calved six months and fed on pasture, produced ten pounds of butter in seven days; these are more popular than others in England, because their beef is finer and has a better mixture of fat and lean; he attributed the comparative unpopularity of the Galloways to the fact that at first some animals were brought to this country that were not pure; he had a farm of 150 acres, and he fed his whole herd of forty cattle from the produce of the farm; he never had to buy anything for them except in very rare cases; he was also a breeder of sheep; he had tried the Cotswold, the Leicester and the Southdown, and he thought, taking everything into consideration, that the Cotswold was the best to cross upon the common stock of Canada, though the crosses of the Southdown would probably be the most profitable for export to England, owing to its good mutton qualities and its early maturity; he had never known any sheep n this country to be liable to disease; he did not approve of breeding from crosses or from ram lambs.

Mr. F. W. Stone, the largest cattle breeder in Canada, expressed his opinion, although he was very largely interested in Shorthorns, that the Herefords were equal to them for improving native stock in early maturity and in weight, and they were the best grazers of any of the existing breeds; some of them were very good milkers, and their milk was richer than that of the Durhams, and they would produce milk in more regular quantities for a longer time; he tried pure bred cattle entirely for breeding purposes; his chief market was in the United States; Hereford grades would be excellent cattle for shipment to England; they would stand the voyage better than the Durhams; Herefords were as sure breeders as the Durhams, and they were more easily kept; they would do well on pasture; he preferred the Herefords to improve the native stock; they would produce better grade steers than any others; the same weight of Hereford cattle would give more beef and less offal than the Durham; the reason the Durham was so generally preferred in this country was simply that it was fashionable, and he did not think the fashion was always founded on argument; he kept constantly importing Herefords from the Old Country, and he believed his herd was always improving; they were all entered in the English Herd Book; there was none for them in Canada; the kind of cattle the ordinary farmer should cross on his common stock depended largely upon his circumstances, the nature of his soil and climate, &c.; the breeds of sheep he at present kept were Cotswold and Southdowns; he raised them only for breeding purposes, and they were all thoroughbred; in some cases the Cotswolds would be the best for ordinary farmers, and in other cases the Southdowns, it all depended on circumstances; he was the first to import Cotswolds into this part of the country; he once imported Leicesters, but they proved to be too small for the taste of the conntry; a cross from a Southdown on a grade or Leicester ewe would be a valuable sheep for the Old Country market; there was a better demand now for medium wool than for long wool in this country; there was less trouble in raising Southdowns than others, and they were better nurses; he did not approve of confining sheep in winter; they became hardier, and liked to have a run about on the snow; he disapproved of feeding turnips to breeding ewes before lambing time; he would recommend a cross between a Southdown ram and a Cotswold ewe as the best sheep for all purposes; he thought it would be decidedly better to have calves dropped in October or November, so that at the end of the third summer they could be sold in as good condition as if they were kept till they were four years old; at present he had 160 Durhams and 120 Herefords.

The meeting of the Commission was held on the 20th and 21st July, at London. The Commissioners present were:—A. H. Dymond, of Toronto, Ont.; R. Gibson, of Ilderton, Ont.; and Mr. Saunders, of this city.

The morning session was occupied with the subject:—Insectivorous Birds. The only witness called was Mr. Wm. Saunders, who has for six years closely studied the subject of ornithology in this section of the Province. The robin was considered by the witness as injurious, destroying large quantities of cherries, grapes and raspberries. Tawneys and brown throats are beneficial. Nighthawks are an insectivorous bird, and very beneficial to farmers and fruit-growers. Of birds partly insectivorous that take their food on the wing chiefly are king birds, swallows, peewees, etc. Yellow warblers eat the larvæ of moths. Vires and red-eyed warblers and cuckoos are insectivorous and beneficial, and should be protected. The nut-hatch is also a beneficial bird. The four classes of wood-peckers are, high holders red-headed, hairy, and downy; the red-headed is very injurious, destroying fruit in large quantities. The cat bird is common, and is chifly insectivorous, but to some extent devours raspberries. It may be considered as beneficial. The crow black bird, when numerous, are very injurious. Other varieties are the cow bird, the red-winged black bird and the oriole. The latter devour the larvæ of moths, etc.

The cow bird takes up its abode in other birds' nests, and is considered one of the most injurious birds, because their young destroy other young birds, they being stronger and more active. Its eggs are laid with those of the oriole, the tawny thrush, and other varieties. The cow bird does not compensate for its destructive habits by devouring insects. The red-winged black bird uses a grain food. The meadow lark feeds on the ground, eating beetles and a small percentage of vegetable food. Witness would consider it a beneficial bird. The Baltimore oriole is a beneficial bird, taking food on the ground and in trees. The sparrow family feeds almost entirely on the ground, and are grain feeders partly. Among the varieties are the song sparrow, which feeds on insects in the spring, but in the fall go in flocks and eat seeds. The song sparrow and nearly all the varieties are almost exclusively insectivorous, and are considered beneficial birds. The purple finch is considered an injurious bird, eating bulbs and flowers. The indigo bird is not particularly injurious. The English sparrow seems to feed about equally on insects and grain. The question has been discussed in England as to the amount of insects devoured, and to what extent they are beneficial. He could not say whether they are beneficial or not, neither could he say positively that they were a pugnacious bird. In a few instances they had driven out swallows from their homes. On the whole the witness considered that insectivorous birds were a great benefit to agriculturists and fruit growers. The canary is a grain feeder, eating seeds of various weeds, etc. He would not consider the grain devoured to be sufficient to condemn the bird as injurious; had never noticed it devouring garden seeds, such as lettuce, cabbage, etc. His opinion was that the house ren is a beneficial bird, eating insects. The black-cap tit are present in the winter, devouring insects and their eggs. Another bird beneficial in the winter is the creeper. The wax wing was not considered as an insect feeder, and was thought to be an injurious bird. The butcher bird lives almost entirely in the woods in this country, and devours largely small insectivorous birds and their eggs. The crow, blackbird and bluejay have also the same bad qualities. The snow bird does not remain in this country during the summer, but goes to Labrador and other northern climates. It eats seeds in the winter, but is neither particularly injurious nor beneficial. Of the food eaten by the crow, the bulk of it is grain, corn, wheat, etc.; it eats also the larvæ of beetles and the insects themselves. The proportion of insect food in the early portion of the year is about twenty-five or thirty per cent., but much less in the summer. Our crow is not the same as the English crow, and the English crow and rook are quite distinct. The rook does not inhabit this country. Witness had never noticed many birds eating the apple worms or their larvæ. It is probable, however, that many are destroyed by some varieties. He knew of no birds eating potato beetles or plum curculio. The woodpeckers and nut-hatchers devour borers. The purple finch is the most injurious bird to the buds of fruit trees; do not think the English sparrow would be a benefit to farmers, although it might be in the city. It is considered as a gramnivorous bird more strictly than insectivorous. Among carnivorous birds four species of hawks are particularly injurious. Small owls are considered beneficial, devouring mice and insects. The sparrow hawk is the most common, but all the varieties exist in numbers sufficient to injure seriously small insectivorous birds. From further evidence it would seem that more care and classification is necessary in order to successful legislation on this subject. In conclusion, he said, I would recommend the destruction of the cow-bird, bluejay and hawk, and would let robins and "Black Birds" take their chances.

The next witness called was Mr. Wm. Haskins, of Hamilton. He had been engaged for twenty-two years in the cultivation of grapes, and considered the area capable of growing grapes was very large in Ontario, all the country south of the G. W. R., and in some places to the north, being suitable. The fruit ripens in many places to the north of Lake Ontario, as far as Ottawa, where the Delaware variety is known to ripen. In the district between Hamilton and Niagara River they are largely grown, nearly everyone engaging in the cultivation of the fruit. In connection with another, witness owns thirteen acres of a vineyard, the yield sometimes being four tons to the acre. Concords can be grown yielding five tons to the acre. Rodgers' No. 9 is a very fine grape. No. 15 is a very good grower, doing best on long trellises or arbors. The Salem is said to be his best variety, and where it can be grown in sheltered positions will do well, but is not successful in open fields. No. 33 is a black grape, good when it does not mildew. Of other varieties the Concord is "the grape of the million," growing nearly everywhere. The Hartford Prolific is a good yielder, ripening at the last of August, but drops its berries on being touched with frost. The Champion is a new variety, much liked, but

witness would not speak positively concerning it. He would not be without the Delaware, growing and shipping it in large quantities as a table grape. The Diana is an old and fine grape, its keeping qualities being very good, but for some seasons ripens irregularly. The Clinton is a very prolific grape, and used mostly for wine-producing purposes. The best qualities to be grown for the market are the Delaware, Concord, Rodgers' No. 4 and the Salem, in sheltered places. He considered a gravelly loam, resting on a clay soil, or better on rock, the earth not being less than eighteen inches in depth, the best soil. The market is generally overstocked with grapes in Hamilton and in other places, and unless turned into wine, will so continue. He sold at wholesale at four and five cents per lb., and considered it was a paying crop, requiring little labor. Some few times early frosts injured the crop. The Clinton is not injured as the Delaware and other tender varieties are. There is no disease of vines in the Hamilton locality to any extent. The "grape vine leaf gall" has been noticed in some instances. For amateur growing he would recommend in addition to the market varieties named, the Diana, Creveling, Rodgers' Nos. 3, 9 and 15, and Rebecca. The Catawba grape does not ripen in this country well. The ground is prepared for planting by a thorough drainage in the first place, followed by deep ploughing, subsoiling, if possible. The vines should be two years old when set out. It is an erroneous idea to try to raise grapes on the first year's growth. Farmers and other amateurs may propagate and grow their own vines by putting in cuttings with two eyes, which will always grow if put in a shaded place all summer and well watered. With this method exercised with proper care, any one can succeed. The shading must be thorough. They can be propagated successfully in flats or swamps, but must be taken up before winter and put in root-houses until spring. He would plant the vines ten feet between the rows, and eight feet between the vines, giving eight square yards to each vine. It is a mistake to have too small a space. Trellises, composed of cedar posts, with wires placed on the west side on account of strong westerly winds, should be used. To prevent the contraction of wires during the frost in winter, the wires are so arranged as to slacken by unrolling at the beginning of winter. When the wood is old it is necessary to adopt the "spur" system of pruning, but the renewal system is better when there is new, strong wood. The two systems should be combined. It is necessary to shorten the new wood and leave the spurs about three inches long, leaving two eyes. The best time for cutting in a garden is in November, then cover them for the winter. In vine localities the pruning should be done in March; if it be done in April the flow of sap would be excessive, likely to kill the vines. He had used thoroughly rotted stable manure, and other kinds. Ashes are also used with good effect. At one time we used four or five tons of bone dust; it produced a good crop, but was too expensive. He preferred a southeast aspect for grapes. After planting two-year-old vines, in four years there should be a large yield. He had had good success in raising new varieties, a white grape being especially good and yielding largely. He had discarded hundreds of sorts propagated in securing three or four good varieties. He believed that the development of new varieties was yet in its infancy, and believed that Canada would yet rival, and probably surpass France, especially in grapes for wine producing purposes. Many pests can be almost entirely prevented by clean and thorough cultivation. He had been very little troubled with insects or grubs. The robin is the most destructive pest, destroying tons of grapes every season. There are no other birds causing any serious loss.

In reply to Mr. Saunders, he said that wine was extensively made in the Hamilton district, and by many of our people is preferred to foreign wines. The Clinton grape will yield 200 gallons to the ton. Some people make two or three kinds of wine from the same grapes. The first run is the best, being almost clear, the next not so good, and so on. After the grapes are ripe they are put through a mill for crushing. In manufacturing the lower grades a great deal of water and sugar is used. In Europe thousands of tons of sugar, and at times spirit is used to "fortify" the wine and preserve it. The desire to make more money is probably a reason for the large use of these substances. The Concord, Clinton and Diana are the best varieties for producing wine. Clinton wine is not fit for use until three or four years old. Our wines are stronger than the foreign wines, and can be sold cheaper. The native wines made, for instance, near Hamilton are sold from $1.25 to $2.50 per gallon.

The next witness called was Mr. Alex. McAllen, of the town of Goderich. His evidence related to fruit growing, and was in effect as follows:—

The fruits cultivated in his district are apples, pears, peaches, plums, cherries, apricots, nectarines, quinces, currants, gooseberries, strawberries and raspberries. There are about 6,540 acres under orchard and garden in Huron—in apples, 4,870; plums, 330; pears, 90; peaches, 52; strawberries, about 50. Fully two-thirds of pear trees are bearing, of apples not quite so much. Apple trees begin to bear in eight or ten years after planting, depending on the variety, however. Grapes occupy about 100 acres; other small fruits about 130 acres, and the balance of 6,540 acres is in vegetables. In 1879 nearly 435,000 barrels of apples were produced. An overplus of the apples are of fall varieties. This fruit does well on nearly all varieties of soil so long as drainage is attended to. The best soil needs to be liberally supplied with potash and lime, and lime stone sub-soil gives clean, high-flavored fruit. Apple trees should be planted from 30 to 40 feet apart, pears and cherries 25 feet, and plum and peach from 15 to 20 feet. The most profitable of summer apples are red Astrachan; for market and cooking, Keswick's; Codlin for cooking only; Early Joe and Indian Rareripe for desert. Tetofsky may soon come into favor in the country. The local demand is not sufficient to consume all the summer apples, many of which are made into cider, fed to stock, or, in many cases, are wasted. A good market is expected in Manitoba, and as soon as there is a means of rapid transit procured, both summer and fall surplus crops can be got rid of. The following are good fall apples:—St. Lawrence, Alexander, Cayuga Red, Red Streak, Strawberry, Fall Pippin and Duchess of Oldenburg. The supply of fall apples is much in excess of what it should be. Those best adapted for shipping are the Tamouse, St. Lawrence, Cayuga Red, Fall Pippin and Alexander. The most esteemed varieties of winter apples in this district are Northern Spy, Baldwin, R. J. Greening, Spitzenburg, King of Tompkins County, Ribston Pippin, American Golden Russet and Wagner. The first two named above and the Tameuse are the most profitable for home market; and for exportation, in addition to these three, are Newton Pippin, Ribston Pippin and King of Tompkins County. Apples intended for the English market should be highly colored and suitable for desert, these commanding the best prices. The first eight of the winter varieties named are good keepers in the winter, and should be carefully packed in barrels after being hand-picked, then placed in a dry cellar of even temperature. The Maitland, Huron and Mary McIntosh are seedlings well liked. Constant cultivation is considered necessary in orchards, at least about the roots of the trees. Pears can be successfully cultivated in the Huron district, and do best on well-drained, rich clay loam. The Bartlett stands above all others for profit. If anything, the standards do better than the dwarfs. The crop is chiefly consumed in the county, but a few choice varieties are shipped, bringing from $1.50 to $2 per bushel. Pears should be picked before too ripe, in order that they may be successfully shipped or kept. The blight has greatly injured the pear culture in Huron, and the only reliable remedy discovered is the knife, in addition to good cultivation. Applications of linseed oil have been found by some to be good. When trees are not scraped and washed the borers make havoc. The only insect doing any damage is the slug, but it is easily destroyed by sprinkling lime or plaster dust upon the trees. Plums are not profitable in this district on account of the curculio. The Lombard, Coes, Golden Drop and the Gages are most esteemed for home consumption, while for market the best are the common blue and Lombard; they stand shipping best, and should be picked when the bloom is perfect, while quite hard, then put in lath boxes averaging twenty-three pounds each. The black knot has destroyed in certain cases whole orchards, but the disease may be cured by cutting off the knots before they burst and rubbing the wound well with salt. The latter substance is considered one of the best manures for plum trees, being also good for apple trees and farm and garden uses generally.

Cherries are grown profitably in the Huron District, the following varieties succeeding best:—Heart, Elton, Begaireau, Yellow Spanish, Elkhorn, Napoleon and Early Richmond. The May Duke is largely grown for market, and finds a ready sale. The crop is chiefly consumed at home The May Duke and Early Richmond are largely sold on account of their good preserving qualities; they also carry well when being shipped, if picked with care. They should be packed for shipping in quart baskets arranged in cases, the same as strawberries. The trees succeeded best with cultivation on well-drained, light loam, or gravelly soil. Strong liquid manures cause the fruit to burst. A very late seeding is cultivated and deserves to be better known. It is of rare excellence, not subject to "rot," a heavy bearer, with a peculiarity of bearing all along the limbs; firm flesh, pale yellow, and having a pleasant acid taste. It ripens at the end of July, and can be shipped to England. Some name it the "Ne Plus Ultra." Quinces can be grown to perfection, but have been neglected sadly, being planted in refuse corners. A few farmers do them justice, and they succeed admirably. The Orange variety is considered the best. They bear regular crops. There is little demand for the fruit, and the growers keep only for home use.

Grape culture is carried on to a considerable extent in the Huron District. The only insect damaging the vine is the thrip, but its operations do not amount to much. Strawberries are also cultivated, the varieties most esteemed for home consumption being the Triumph de Grand, Monarch of the West, Sharpless, Green Prolific, Col. Cheney, and Chas. Downie; and the Wilson for market and shipping. They should be packed in quart baskets, in cases with shelves and good ventilation. The average yield per acre of the best varieties is from 4,000 to 5,000 quarts, but in small gardens will run much higher. Raspberry culture is not engaged in much on account of the abundance of the wild varieties. Varieties grown with success are, Philadelphia, Arnold's Diadem, Franconia, Clark and Mammoth. All the varieties tried have proved hardy and able to stand the frost. There are no insects that injure the crop except the small fly that eats the leaves. All the varieties of blackberries tried are hardy, and are those generally sold by the nurserymen, the most esteemed being the Kittatinny. The most esteemed variety of red and white currants are the cherry and the white grape. The culture is profitable. Six or seven feet apart is thought a good distance for planting; the soil should be a dry loam, rich and well cultivated. The culture of Black Currants is profitable, Black Naples and Lee's Prolific being most esteemed. The soil should be rich and well drained, and the plants set in rows seven feet apart, and the distance between the rows of eight feet. Less space would do, but this gives ample room for cultivation. Gooseberries are grown with profit, the Houghtons and Downings being best liked. The bushes should be planted four or five feet apart, on well-manured clay soil. Water-melons are grown by amateurs for family use, Black Spanish, Mountain Sweet and Goodwin's Imperial being esteemed. The Mountain Sweet ripens first. There is a ready sale for the fruit. Of muskmelons the Nutmeg variety is most esteemed, and ripens in August and September.

Mr. McAllen, speaking of forestry, said no pains had been taken to leave the forests so as to be a protection or windbreak, and nothing has been done towards replacing them. Windbreaks benefit the crops, and so do groves when they are not too thick, when they may be injurious. One great hindrance to tree growing are various animals running at large.

STOCK RAISING.

Mr. Gibson took the chair, the first witness being Mr. C. M. Simmons, Reeve of Lobo. He had been in the business of raising and shipping for many years, and his evidence was founded on wide experience. He is in favor of Durhams for shipping, and considers Durham grades good dairy cattle. After giving important evidence concerning feeding and shipping cattle, he gave the following concerning sheep:—He had been for many years a sheep-feeder and shipper on an extensive scale. The section of country upon which his observations were based was Lobo, East Williams, McGillivray, parts of London Township, and other adjoining sections.

Years ago the old Leicester variety was common, and since then there have been a few Cotswolds and Lincolns, which have been crossed with the Leicesters, giving a good class of sheep. The district is well advanced in the matter of sheep-raising. For shipping they are bought at two years old, not under if possible. There is a great scarcity of wethers, which are highly esteemed for shipping purposes. The difference between a ewe and a wether, each weighing 200 lbs., is about $1. For the English trade, sheep weighing from 150 to 160 lbs. are most sought after. In shipping to England the weight should not be less than 135 lbs. The best time for exportation is in May or June, immediately after shearing. Farmers are making a terrible mistake in selling off all their lambs, as is done to a large extent in the country. It is a positive loss to sell lambs at, say $3, as by keeping them for a length of time a much larger price can be realized. The Lincoln matures early and is a hardy little sheep. Cotswolds are larger and coarser, and when crossed the stock yields good mutton and wool, As regards maturing, the Leicesters rank first, the Lincolns second, and the Cotswolds third. He could not say which particular breed did best, as they were all greatly mixed. A great many are going into the Lincolns. The supply of sheep is not sufficient for the demand for shipment. The lambs should be kept for two years. Our sheep are much finer than the American breeds. Too heavy sheep are not desirable for shipping, and none should reach 200 lbs. As a shipper, he paid particular attention to the quality of the mutton more than the wool. The black-faced sheep are preferred in England, and the wethers would bring a higher price than our ordinary sheep. He had had no experience with them, but thought it would be advisable to give them a trial. The demand for medium wool points to the fact that crosses with Southdowns are valuable. He believed most decidedly in a mixed husbandry, and there was a good profit in sheep. Five sheep can be kept for the same cost as one steer for two years. Taking the fleeces of the sheep at $5 each we have $25; which, with the carcasses at $7, makes the total $60. The comparison shows it to be very favorable in behalf of sheep-raising.

The evidence of Mr. J. Geary was taken, relative to the shipping of cattle. Witness farms extensively and also feeds stock largely, stall-feeding about 100 to 125 annually. Cattle are preferable above three years old for feeding. It is almost impossible to get the quality of steers required, as the farmers have not realized the nececessity of good breeding, yet Short-horns are necessary to secure a good stock. There is little profit in feeding common bred cattle. My steers last fall averaged from 1,180 to 1,190 pounds, at the age of three years, coming four. I am perfectly satisfied if only the manure is gained, but the gain otherwise from the above figures seems very fair. Cattle should be shipped for the Old Country at three years old. No animals but thoroughbred should be used for breeding. Stock-raising is a decided necessity in maintaining the fertility of the soil. I used, last winter, with a couple of fine steers, "Yorkshire Food." They had lost their appetites, and this acted as a tonic, but not as a food. Galloways and the common cattle are not as good for fattening as Short-horns. Galloways do not domesticate so quickly, and they are afraid of other cattle. One cross between a thoroughbred and common animal produced an improvement.

Grass-fed cattle shrink in shipment, but they would do better if a little grain were fed. A thoroughbred steer is worth a penny and sometimes twopence a lb. more in England. There is more beef on thoroughbreds, and they cut up better. Scotch Poles or Angus cattle sometimes take well in the English market. Our only means of profit is by good breeding. The Canadian cattle trade suffered last year in England on account of the irregular quality of our shipments. Southdowns are growing in favor, and are increasing here. The Downs and Leicesters are a good cross.

Mr. J. Plummer was examined relative to poultry. He said that he had paid considerable attention to this work for a number of years. The light Brahmas, crossed with the game variety, produced the most desirable class of fowls. They were much hardier, could take care of themselves, were profitable for table use, and raise chickens well. Black Spanish are good layers, but are too tender for the climate, and not good for table use. The flesh and eggs of the Dorkings are good, but the variety is not equal in value to the Brahmas. He raised a great many fowls in view of winter laying. He had hatched a few chickens with incubators, but thought the trouble was in raising the chickens. The trouble is to get a suitable "artificial mother." Fowls require good feeding in the winter, corn and animal food being the best. There is a large increase in poultry raising in the country, among farmers. Eggs are shipped in large quantities to the United States.

The Commission then adjourned.

The Cultivation of Rape.

Rape, although little used in America as food for stock, is widely used in Great Britain and the Australian colonies; it is unsurpassed by any other feed for the production of wool and mutton of high quality. In no way can you make prime mutton at so low a figure as by the use of rape. It is admirably adapted for the recruiting of aged or sick sheep, and for the weaning of lambs; flush the ewes on it for four weeks previous to letting the rams to them, and I will guarantee you, with proper care at lambing time, a large increase.

The profits in rape culture are great, and nowhere can I conceive it of greater value than in arid stock countries, where the grasses in summer are almost a total failure. As yet no substitute of importance has been found to fill the place of grass, but it can now be acquired in rape; I prefer the dwarf to the giant sort.

I experimented on it largely; the result was a complete success. Seven acres were sown on the last week of May, 1874, in drills 30 inches apart, at the rate of 3 lbs. of seed per acre. In six weeks after it was sown long-wooled sheep were turned on it at the rate of eight to the acre, and in addition to them, about twenty large Berkshire pigs on the same patch. Sheep and pigs were rolling fat, the former bearing a marked difference in condition and general health to those that did not have the benefit of the rape feed.

On the 21st of July another ten acres were sown on a piece of fallow, sown broadcast, and notwithstanding the excessively dry and hot summer, the crop was most luxuriant; the average height of the plants was 3 feet (the giant description),

As soon as the plants are eaten down, remove your stock and let the crop rest for a few weeks, when it will be sufficiently grown to receive them. This you can repeat at pleasure. Instead of fallowing, why not sow your fallow lands in rape? Sow in drills 20 inches apart, so that you can cultivate between the rows, producing a crop that will carry 12 sheep per acre. Figure on this, and compare the difference of the profits in fallowing. The annual weeds will be kept under control, the soil will be protected from the scorching rays of the summer's sun by the foliage of the plants, the profits of the stock would be enormous, either from the increased weight of wool, mutton, beef, pork, milk or butter, and yet the profits do not rest here. Think of how your lands will be renovated and restored under such treatment, by the tons of solid and liquid manure that will be deposited on them. Look also at the additional bushels of wheat and oats you will grow the following season under such treatment, and also of the general improvement of your live stock in condition. Farmers, try it on a small scale to begin with, and I feel certain you will see its great advantages and determine to cultivate it. Rape is excellent feed for cows and calves—only be careful not to allow them to remain too long on it for the first few days; otherwise they may be affected with hove or swelling.

Though the proper time to sow rape is from the 15th to the 20th of June, it can be sown after hay, barley or any early crop, and produce an abundance of fall feed, as it is ready to turn on in about six weeks from the time of sowing. To prepare the land, plow as soon as your crop is taken off, harrow and roll thoroughly, pulverizing the land. For a fall crop it is best to sow broadcast, at the rate of 5 to 7 lbs. of seed per acre. Before sowing have the land mellow; after sowing, harrow and and roll. What is not wanted for feed will make an excellent green manure to plow in late in the fall.

In all our cropping and planting we should remember that the farm is our capital, and that increasing its producing capacity means adding to our principal, while reducing it is taking away the "means by which we live."

Late Culture of Corn.

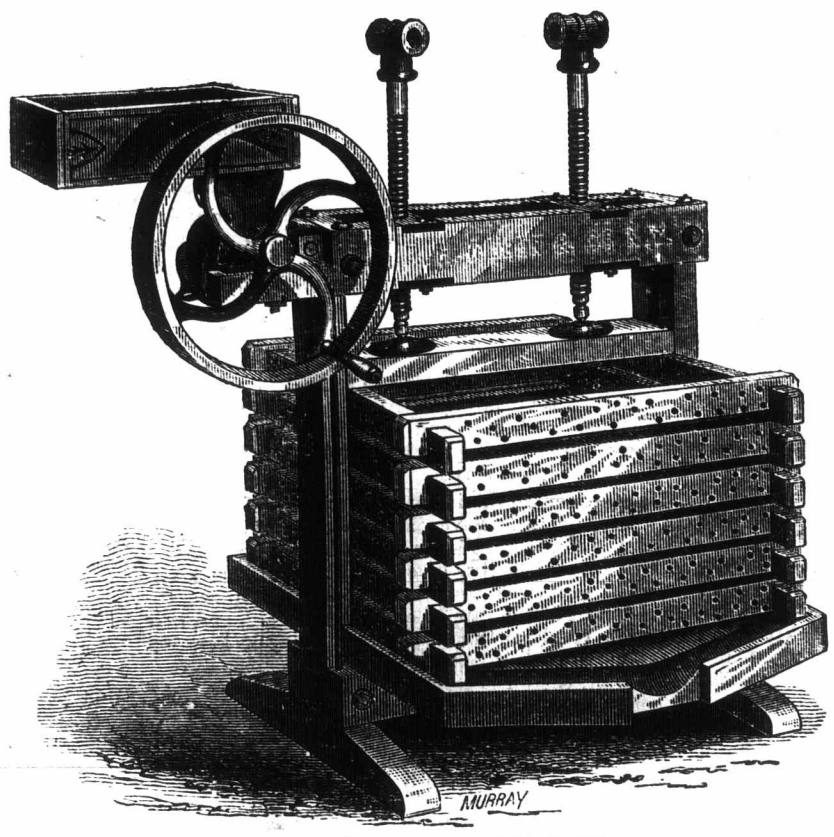
Frequent cultivation is the only available stimulant which can now be made use of. But the cultivation must be shallow and not deep, otherwise the growth will be checked. The roots are the feeding organs of plants, and when a plant is in full growth the roots are actively engaged in drawing nutriment from the soil. At this season the roots of corn have entirely filled the spaces between the rows, and if the soil is disturbed the fine feeding roots which are so small as to be invisible to the unaided or careless sight, are completely broken up. This not only confines the roots to the narrow strips of ground upon which the plants stand, but it injures them and renders it necessary for them to repair the damage immediately by throwing out new fibres. The plant is thus seriously checked and its growth arrested, for the supply of food is cut off and the growth is turned into a new channel. This was made very apparent to the writer last season, when a field of sweet corn was deeply plowed contrary to orders by a stupid or wilful laborer, instead of being worked with the horse hoe. That was in July and during hot weather. The corn stopped growing from that day and grew no more, and the crop was a total failure. There were many points there presented for study, and the experience was valuable, although costly. The soil was plowed out into a deep furrow and was heaped up around the stems of the corn. If it had been a wet season the crop might not have suffered, and if the soil had been low and wet the crop might have been benefited, because the water would have been lowered and the roots practically raised above it. But the soil was light and dry, and the weather was hot and dry. The dry soil was fully exposed to the sun and was more completely dried, and the roots being cut off and confined to a bank or ridge of dry soil, had no room to spread and could not repair the damage. Had the soil been simply stirred on the surface only, the roots would not have been touched and the crop would have been invigorated and assisted. The practice of plowing corn instead of working it with a horse hoe is common, but the practice is better "honored in the breach than in the observance." The plow should be banished from the corn field as soon as it has once prepared the soil for planting. After that the soil should be kept level and the surface only stirred. The loss occasioned by deep plowing is enormous; it is all due to a mistaken practice which is common only among persons who do not think or observe. In wet seasons it may not be so mischievous, and on wet land it may be advisable, but it is to be avoided on dry light soils, and especially in dry seasons.

English Agriculture—Observations of an American.

Gov. Smith gave an account of his visit to Europe and what he saw of farmers there. He said the English farmer considers his land and his stock as his servants, and makes the most of his opportunities. Thoroughness in draining, cultivation, and fertilization are the basis of success. A great amount of perfection has been reached in this direction. After the land is thoroughly underdrained, it is reduced to the finest tilth possible with plow and harrow. Much attention is paid to fertilization and a great amount of special fertilizers are used, in addition to all of the manure that can be made upon the farm. Phosphates are largely used, costing a good deal of money, but the farmers cannot get along and pay their heavy rents, without this investment. One man raises 43 bushels of wheat per acre, and, selling at $1.25 per bushel, makes a profit. Calculates to raise two crops a year; first sow wheat, and after this is removed the ground is forked over, releasing the stubbles and roots, which are gathered in heaps and burned, after being covered with earth like a coal-pit. Succeeding this operation, vetches or turnips will be sown, for a second crop. The turnips or mangolds do not attain full growth, but make excellent food for early winter. In this way much more profit is realized than with us, where only one crop is grown in a season, and in many cases a poor one at that. The same liberal policy in feeding and care is used in raising stock, the object being to keep the animal growing until maturity is reached. Visited the farm of a most successful farmer. He uses a large amount of American corn, barley, oil-cake, &c., and these are not fed separately but together, changing the proportions often, this being better than a change of feed. This high feeding helps to enrich the land, while the best beef and mutton are produced.—[Ex.

To Make Good Pure Cider.

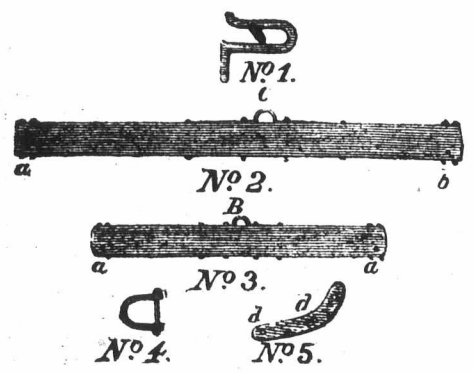
A good press is the first requisite, and we have this month procured the cut of a mill which gives good satisfaction. Good sound, ripe apples should always be selected, and after sweating, before being being crushed, wipe dry, and if wormy or rotten throw them into a pail by themselves from which to make cider for vinegar. As fast as the apples are ground the pomace should be placed in a previously prepared open vat of suitable size, with a false bottom. It is best to let the pomace remain in the vat over night before pressing, as this will give the cider a rich, fine color. To press out all the juice, we would recommend that the press be laid up with strainer cloth, and the pomace laid inside this with good sweet rye straw. Apply the power equally and moderately, giving plenty of time to drain, and immediately put in a cask, but be sure the cask is clean and and sweet. Leave out the bung for a few days, keeping a small keg near by so as to keep the cask full, and also that as much pomace as possible will work out. As soon as worked to taste bung up tightly and let it stand until thoroughly settled; then put a spigot in some three inches from the bottom of the cask, and run off into a clean, sweet barrel; add ten lbs. of loaf sugar per barrel, and you will have an excellent cider. In previous years we have noticed in many sections of the country a large crop of early apples, for which there is little or market, and a great many are allowed to rot on the ground, which is a loss no farmer can afford or should allow. The best of these will make good cidar, which in many localities will find a ready sale in the early part of the season, either in cities or conntry villages. The inferior apples, and the better class of wind-falls, should be saved to make vinegar. If a farmer wishes to be prosperous he must allow nothing to waste. The Farmer's Favorite Cider Press is made by the Higganum Manufacturing Corporation, Higganum, Conn., U. S. A. See adv.



FARMER'S FAVORITE CIDER PRESS.

Three Horses Abreast.

In reply to enquiries on the subject, we now give illustrations of whiffletrees, &c., for hitching three horses abreast. Also full particulars how to make them. There has been a long felt need for



such, especially in some of the older sections of Ontario, where double plows have been used for years, doing excellent work on all kinds of land. Two furrows are turned at once, only three horses and one man being employed, the cost incurred by another horse and man is saved.

No. 1 represents a hook with falling link to hold single whiffletrees; there are three of them at *a*, *a*, *a*. No. 2 is the three-horse evener, to which is coupled the two-horse evener at *B*, by the bolt in No. 4. The half circle of No. 4 goes behind the eveners and holds them level for the draft. No. 3 is the two-horse evener—*B* being a strip of 1¼ inch band iron, bent to hold the coupling bolt in No. 4, and held in place by four rivets, ¼ inch. The wood is of ash, 1¼ inches thick and 4½ inches wide, 3 feet 2 inches long; whiffle-tree hooks are placed at *a*, *a*, 2 inches from the end, and 3½ inches from the front side of the evener. I have two rivets at *a*, *a*, at each end. No. 5 is an iron to take the draft to the left side of the pole, is placed on the under side and fastened at *d*, *d*, with ⅝ inch bolts, to pole and hound. The draft pole is of ⅝ inch iron, and very flat head, runs through the hammer strap, then through No. 2 at *C*, and No. 5 at the upper hole, and is held in place by a nut and spring key, so that there shall be no danger of the bolt getting out. No. 2 is of ash, 4 feet 4 inches long, 4 inches at one end and 5½ inches at the other in width, 1½ inches thick, straight on the front side; a whiffletree hook at *a*, with two rivets; band iron strap of 1½ inches in width at *C*, with four rivets; coupling pole at *b*, with four rivets. *A*, in No. 2, is 3 inches from front side; *b* is 4½ inches from front. If any washers are necessary the maker can put on what he thinks proper. I have a block of wood nailed on the left side of the poles for the draft bolt of No. 2 to rest against; mine is held in place by four nails; it has never been off. Spread your horses at least two feet apart. In No. 2, *a* is 22 inches from *c*, *b* is 16 inches. In No. 3 *a*, *a* are 2 feet 10 inches apart. The hooks are riveted, having a little washer on the under side. I should not recommend making the three-horse, or even any of the whiffletrees, longer, as they would be in the way on bridges, &c.

A beet sugar company has been started at Farnham, P. Q. The company has all the capital required to go on, and the experiment, we are told, will be made a success, if success be possible. A competent engineer from France or Germany will be engaged, and the building will be commenced this fall. No doubt we will now hear of other factories being started in the Dominion, but to Farnham and its energetic men will be given the credit of establishing the first beet root sugar factory in Canada.

The Hessian Fly.

Dr. A. S. Packard, of the Entomological Commission at Washington, treats in his recently published report on "The Hessian Fly" of the ravages, habits, enemies and means of preventing the increase of this insect. The preventive measures may be summarized as follows:—

1. It is advised to sow a part of the wheat early, and if affected by the fly to put in the rest of the seed after September 20, which will, in most cases, save the crop. By destroying the first brood the second will not appear.

2. Partially affected wheat may be saved by the use of fertilizers and careful cultivation; and, if Winter wheat, the fields may be recuperated in Spring.

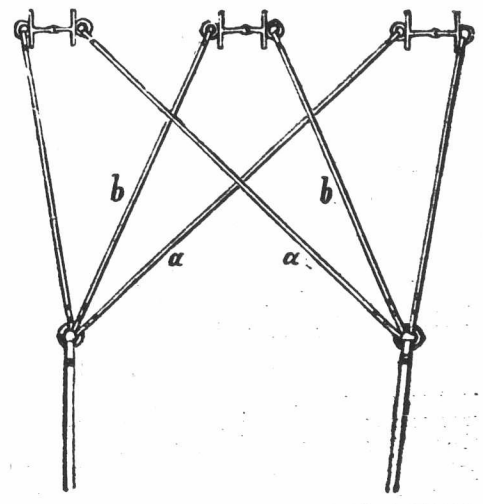
3. It is stated that many of the eggs and larvæ may be destroyed by pasturing with sheep and close cropping of Winter wheat in November or early in December. Rolling the ground will answer nearly as well.

4. It is advised to sow hardy varieties of wheat, especially those which tiller vigorously, Diehl for early August sowing and Clawson for late.

5. Lime, soot and salt are named as special remedies, and it is also recommended to rake off the stubble, but too close cutting and burning of the stubble may result in harm by destroying the useful parasites, of which there are several species. Indeed, it is claimed that nine-tenths of all the flies hatched are destroyed by these minute parasites.

There are two broods of the fly. The first deposits its eggs from early in April till the end of May, and the second appears in August and September. The eggs are laid on the leaves of the wheat, and the young maggots, which hatch in about four days, soon find their way to the base of the leaf, remaining between it and the stem near the roots.

The Maine Farmer says that the husbandmen of that State who raised beets and sold them to the Portland Beet Sugar Company received at the rate of $100 to $150 per acre. The Company offers $5.50 for 2,240 pounds of unwashed beets, free from earth and stones. For every acre of beets sold the Company offer to return to the farmer a car-load of beet-pulp containing ten tons, at the rate of $1.50 to $1.80 per ton, delivered to him at the nearest railroad station. The crop was extensively planted this spring in that State, and the prospects are that the supply will be greater than the demand.

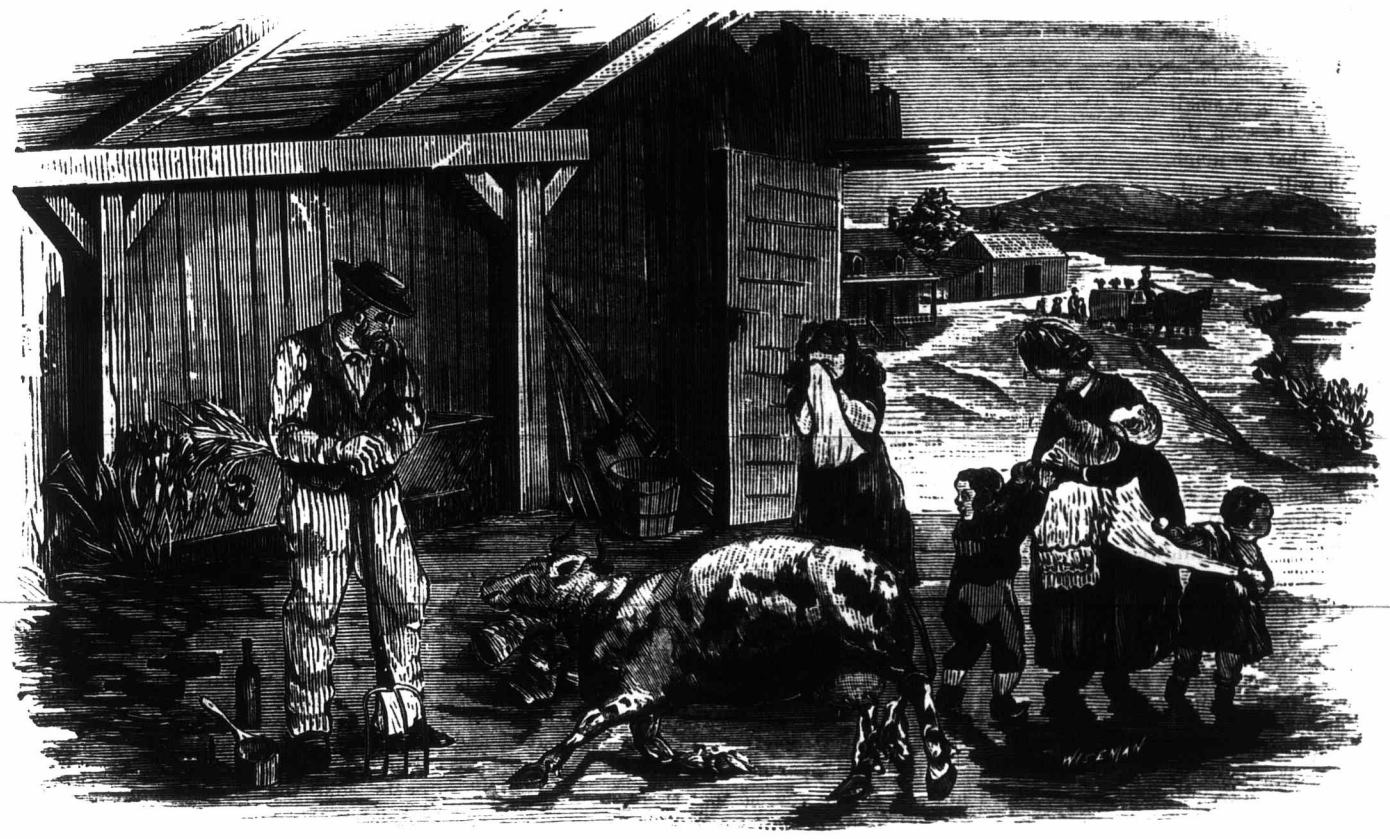


LINES FOR DRIVING THREE HORSES ABREAST.

The new fly pest, which blows a maggot about three-quarters of an inch in length and is generally found in mangold crops, is creating a sad havoc on the north of England farms, and defies all attempts to exterminate it.

The Last Cow.

We have had this cut engraved to represent the cow we saw dying at Pictou, Nova Scotia, and the accounts we heard of many poor families that have actually lost their last cow. The hearse in the distance is a memento to the memory of the person who was said to be the most zealous, industrious and enterprising farmer near Pictou, and who is said to have actually died from despondency caused by the repeated loss of his animals from this (to the farmers) unknown disease. We now trust that the Government will be able to furnish satisfactory information to the farmers around Pictou, showing them plainly the cause of the death of the animals; also the proper precautions to be taken to prevent further losses. The picture tells its own tale, and many a poor family has been found sorrowing over the last cow in that locality. We hope this may prevent more sorrows from this cause. The whole Dominion need not be alarmed about this disease, because it is only a local malady,



THE LAST COW.

But these poor people deserve the vigilant care and protection of our Government. For further particulars see the ADVOCATE for January, 1880.

The best way to keep weevils out of wheat is to put it in bins that are not infested with this insect. If the granary is infested, either clear and fumigate until every weevil is destroyed, or put your wheat somewhere else. The larvæ of the weevils that are in the grain may be destroyed by heating the grain, but this is rather expensive, unless a man has an oven or kiln made expressly for the purpose. Grain that is kept for seed only may be put into tight barrels, and a little benzine or kerosene oil poured in to destroy the weevils, but this would injure the wheat for making flour.

About thirty to thirty-three tons per acre is a fair crop of mangolds or sugar beets—swedes somewhat less. There have been grown in Canada heavier crops than thirty-three tons, or about 1,000 bushels. Sixty pounds of such roots, with hay or good oat-straw, feed an average cow for one day. For a period of seventeen to eighteen weeks, from two hundred to two hundred and seventy bushels will be ample root food for a cow. From these details you can readily estimate how many cattle of average size you may feed through the winter.

Effects of Green Crops Plowed in Late.

A correspondent of the Practical Farmer writes relative to the results he had from sowing grain for plowing under in the fall, during July and August, and some of our farmers who have fields that yield neither pasture nor hay on their light lands would do well to take a hint from what he says, which is as follows :

I seeded land last year which I designed for potatoes with rye; but the seed not holding out, there was left a three cornered strip of short rows which was not seeded. This spring, about the 20th of May, as the rye commenced to head and was standing knee high to the horse, I plowed it under, using a chain to draw it nicely under the furrow; but I noticed then that the part with no rye on was becoming foul with weeds, and through the summer the outlines of this vacant place showed very distinctly in the potato tops, not being as green, and smaller than on the rest of the field, and the yield was not as good there, though the balance of the field yielded so well that it was evident that the green manuring had been very good for them. After harvesting two fields of winter grain I found that the clover seeding on them had failed; so I cultivated these fields and sowed them to rye about the middle of August, and it was a pleasure all the fall for me to see the clean and green appearance of these fields as they compared with the foul condition of most of the stubble fields in this section (for nearly all the clover on them failed to grow on account of an early summer's drought.) These fields gave about two month's pasturing for a hundred sheep, leaving (the sheep as well as the field) apparently all the better for it. We all think clover to be the best of all to plow under for green manuring, but many times, either from the failure of clover or for the want of time enough to grow it, the farmer could improve his land materially and cheaply by growing it to buckwheat, or oats, or rye, for plowing under instead. The opportunities for putting in such crops will be found by the farmer after he has once seen the advantage of them and how cheaply and quickly they can be grown This green manuring, as far as it can be practised, is done much cheaper than by any other plan. Besides it keeps the land sheltered and clean from the harvest of one crop to the time of putting it into another. Land intended for next year's root crop can be sown to advantage with rye, and will afford an early spring feed, if not pastured too close this fall. It can be, however, plowed up in time so as not to interfere with the preparation of the root ground. Land intended for summer fallowing can be treated in the same way.

Stir the Soil to Retain Moisture.

Massachusetts Agricultural College has made experiments as follows, by taking three different kinds of soil, clay, loam and light sandy loam, filling two boxes with each, and sinking them into the ground until level with the surface, previously weighing them. One box of each kind of soil was hoed every morning, and the other boxes left uncultivated. This practice was kept up until it rained, which in this instance was seven days. The boxes were then taken up and weighed to ascertain the amount of moisture lost, with the following result: The clay soil, tilled, lost at the rate of 904 barrels per acre ; the untilled, 1170 barrels per acre, or 266 barrels more than the cultivated area. The tilled, sandy loam lost at the rate of 542 barrels per acre, and the untilled 1276 barrels, or 734 barrels the most. The heavy loam tilled, lost at the rate of 1106 barrels per acre, the untilled 1329 barrels, or 223 barrels more than the tilled. The average loss per day of the tilled loam was at the rate of 158 barrels per acre, and of the untilled 189 barrels ; of the tilled clay, 129 barrels, and of the untilled 167 barrels ; from the tilled sand, 77 barrels, from the untilled 167 barrels. In other words, a farmer cultivating an acre of land under like circumstances, would save 256, 734 or 223 barrels of water in the same time, according as his land is clay, sand or loam, which would have been lost by evaporation had not the land been tilled.

Hence it is clear that cultivating the soil in time of drouth retains moisture. This may appear somewhat odd at first thought, but when we recollect that water moves through the soil in capillary tubes, it is plainly perceptible that if these tubes are broken by cultivation water can not pass through them so readily. The temperature of the soil, too, affects the evaporation of moisture which increases with the heat of the soil. As soil untilled becomes warmer than that which is stirred up, this gives us another reason for cultivating in warm or dry weather.

These experiments were repeated a number of times but always with the same general result. While they do not tell the whole story, as the soil in the field has larger and deeper sources from which to draw water, they do prove decisively that stirring the soil prevents the evaporation of water to a considerable extent—a fact which has been borne out by tests on a large scale.—[N. E. Homestead.

Rose cuttings and all other cuttings need only clean, moist sand, till they have roots to receive nourishment; then leaf mold or any light, moderately rich soil will answer.

Garden and Orchard.

Benefits of Hoeing.

One of the greatest benefits from sowing our garden seeds in rows is the opportunity it affords us of hoeing frequently and thoroughly between the rows.

Too many persons who use the hoe supposed that the chief benefit derived from it is to kill the weeds. That, certainly, is an important work, and which is greatly neglected. Weeds are not only in the way of cultivating the crops which we plant, but they rob them of much of the nutriment which they so much need. Hoeing, then, is an essential service in respect to destroying the weeds.

There are other advantages, however, which are quite commonly overlooked. Let us see:

1. The loosening of the soil in the operation of hoeing is beneficial to the plants; as much as the destruction of the weeds and more so.

2. Moisture abounds in the atmosphere during the hottest months, and it is absorbed and retained most abundantly by the soil which is in the most friable state. Prof. Schluber found that 1,000 grains of stiff clay absorbed in twenty-four hours only thirty-six grains of moisture from the air; whilst garden mould absorbed forty-five grains; and the fine magnesia seventy-six grains.

3. Then, again, pulverizing the soil enables it better to retain the moisture absorbed.

4. The soil, in order to be healthy and active, must breathe. A light, porous soil admits the air and thus it is fed and greatly invigorated by the atmosphere.

5. The sun's rays heat a hard soil much quicker than a loose one, and the hotter the sun is, so much greater will be the evaporation from it. So that the hard soil is deprived of its moisture much sooner than one of a loose texture.

6. The roots of plants can find their way through a moist, loose soil, in search of food, much better than they can through hard day soil.

7. A soil that is kept loose near the surface by the action of the hoe, will receive and hold the rain water that falls, while a hard soil will allow most of it to run off into valleys and streams as it falls.

An English gardener, Mr. Barnes, of Devonshire, in getting an opinion of the importance of hoeing, said he "did not agree with those who say that one good weeding is worth two hoeings; I say, never weed any crop in which a hoe can be got between the plants, not so much for destroying weeds and vermin, which must necessarily be the case if the hoeing be done well, as for increasing the porosity of the soil, to allow the water and air to penetrate freely through it. He adds "I am well convinced by long and close practice, that oftentimes there is more benefit derived by crops from keeping them well hoed, than there is from the manure applied. 'Weeds or no weeds,' I still keep stirring the soil, well knowing from practice the very beneficial effect it has."

Stripping the Land of its Timber.—A correspondent of an agricultural paper writes from Colorado: Stock is dying on the plains for the want of pasture, and unless we have rain this month our stockmen will be compelled to drive out of the country or lose their herds. We have never had such a season before. Stripping our mountains of their timber is working great injury to farmers. Heretofore the snows were held back in the mountain forest until needed for irrigation; now they are melted and precipitated into the creeks and rivers, passing away in half the time usually required.

Very frequently plants purchased at the greenhouse begin to droop and turn yellow. A lady tells, in Vick's Magazine, how she managed a calla which was rapidly going off into a "green and yellow melancholy." "I procured a three-gallon glazed crock, filled it two-thirds full of rich earth, and then put in the plant and filled nearly to the brim with water, which I have kept at about that level ever since, adding now and then a few drops of ammonia. To-day my calla stands four feet high, with four broad, dark-green leaves, a stalk in the water is as large as my wrist, and two flower stems are appearing."

Rose Culture.

Every rose will not come from the slip. Of the three great divisions into which the rose family is separated, namely, the damask, the noisette and the tea, the last two may be propagated with more or less readiness from the slip or by budding; the first only by dividing the roots and planting the seed, which latter method is resorted to, however, only when it is desired to obtain new varieties.

The best season for taking rose slips is in June, just after the profuse bloom of early summer is over, although a person who knows exactly how to cut a slip may find good cutting throughout the warm months. Judgment and discernment are needed for the selections at all seasons.

One should choose from a good vigorous branch of last year's growth a fresh shoot, containing two or three buds, such as will always be found more or less swollen at the base of the leaf stems. It should be cut from the parent branch diagonally, with a smooth, clean cut that will bring off a little of the old bark as well, in order to make the condition as favorable as possible for the formation of roots. Have ready a box of rich mold. With a round pointed stick make a hole several inches deep, and fill it with the clean sand; insert the end of the slip in this sand to the depth of one or two inches; be sure to make it firm in the soil, and the sand acting as a percolator for moisture, you may keep your slip well watered. You can soon see, by the swelling of the buds and the dropping off of the old leaves, whether the slip is indeed taking root, but do not attempt to remove it to the place where you would wish it permanently to remain until it has put out several sets of new leaves.

An ingenious way to raise a set of slips has been recommended by Mrs. London, which we have tried with unvarying success. It is to take an earthen-ware flower pot, gallon size, and fill it more than half full of broken potsherds, pebbles, bits of slate, or such things; now set in the middle, on top of these refuse materials, another similar flower pot, half-pint size, with the hole at its bottom stopped up tightly with a cork; let its mouth be even with that of the larger one, fill up the interestices with silver sand or other pure sand, and set in a row of slips all around, cut according to the direction given above. Keep the inner pot full of water all the time, but do not water the slips directly. In about six weeks your slips will have fine roots and can be potted. A hand-glass always hastens the process of rooting, and enables you to take advantage of the sunshine; but if you are not provided with one, be careful to keep your plants in the shade until they show certain signs of independence of life.

Roses need very rich soil to bring them to perfection, thriving best in a mixture of well rotted manure, sand and garden loam, and to stint them of nourishment is indeed poor economy.—*American Cultivator.*

Professor Lacuby, of Cornell University, in fighting the cabbage worm, says: "After numerous experiments and very careful trials, we can recommend the following remedies, knowing them to be safe, cheap and effective. First, a solution of one pound of whale oil soap, applied two or three times during the season. Second, tar-water, prepared by placing a few quarts of tar into a barrel of water, and applying this mixture during the season. Having no whale oil or tar at command, use suds made as follows:—To one quart of soft soap add a teaspoonful of crude carbolic acid, stir and mix thoroughly. Then to a bucket of water (soft water is preferable) add one-third of the soap, make a suds and sprinkle so as to wet the cabbage thoroughly; repeat the operations every morning until the worms are distroyed.

Saltpeter in the proportion of a teaspoonful to a gallon of water, sprinkled on plants, is said to be a destroyer of squash bugs and other insects.

Arrange as far as possible to allow hogs the run of the orchards from the time the first fruit begins to fall. They destroy many pests of the orchard by eating wormy, damaged fruit, etc.

Don't manure your pear trees with stable manure if you would have your trees escape the blight. Apple trees will be benefited by the application, but pear trees won't stand it. Thin soil is best for pears.

Squash and Melon Bugs.

I have been among my vines regularly at least once a day killing the black offensive vermin. Wherever I see a leaf drooping I know that two or more of the bugs can be found on the under side of it. This is becoming rather tedious; and although I have so far kept the vines vigorous, I know that one or two days' neglect would ruin them. Within a day or two I have taken to sprinkling liberally with water, and turning up the under side where the eggs are deposited. Probably water will destroy the vitality of the eggs, as I notice that the squash bug, like most of his class, is most destructive in a dry time.

Still another expedient I am using as usual at this season of the year—filling a cask holding several pailfuls with water and putting in a little well-rotted manure. Then I add a few lumps of saltpetre, a little aqua ammonia and enough boiling hot water to bring the temperature to blood heat or a little more. Then I put in two or three handfuls of gypsum, and with a tin pail and a cup apply about one pint of this warm water to each hill of cucumbers, squashes and melons, covering a little dry earth over the hill to prevent it from cracking and baking. The effect is almost magical. I can see a great difference in the vigor of the plants within twenty-four hours after watering them. In fact I think the vines are growing so strongly that I shall need to give them less care during the coming busy season. When I first began this practice several years ago I feared to make the mixture too strong lest it should kill the plants. I find, however, that there is little or no danger of this. The stronger the manure the more rapidly the vines will grow. Whenever the vines appear to be suffering from drouth I water them, but seldom apply the stimulant more than once. Hills of vines are almost always full of manure, but it is generally in unavailable condition from lack of moisture.—[Country Gentleman.

Dried Fruit.

An enormous increase in the evaporated fruit business is taking place in Western New York, the recent legal decision that there is no monopoly of the sulphur process of bleaching having had a stimulating effect on the industry. The opinion of American experts is that fruit can be dried by the evaporator cheaper than by sunlight, and the product is immeasurably better. A single New York firm last year evaporated twenty thousand bushels and bought fruit evaporated by others equivalent to three hundred thousand bushels. Of this a London house took one hundred and sixty tons, and has doubled its order. The growers throughout New York State are preparing to develop the foreign market for this product. Each evaporator will dry one hundred bushels of apples a day. Girls are employed at the work, and earn from sixty cents to a dollar a day. After the apples are pared and sliced, which is performed at one operation, they are bleached by exposure to sulphur fumes for about an hour; afterwards they are evaporated, and the double process keeps them edible for an almost indefinite period.

Bark Bursting.—This occurs on thrifty young apple trees near the ground. It used to be thought that freezing of the abundant liquid sap occasioned this. But then it occurs as frequently before the first autumn frost as after it. The sun has been supposed to cause it, because it is oftener seen on the southerly side of the stem than on the north. But sometimes, like the tides, it occurs on both sides at once. The College Quarterly prints a theory of explanation given by some German observers who have made this phenomenon a special subject of study. They say that the protoplasm in the cells of the newly-formed wood and bark is extremely hydroscopic, inbibing water and swelling like a sponge. The aggregate force of expansion of thousands of cells is sufficient, certainly, to account for the disruption. The editor adds the remark that some sorts of trees, more liable to burst in this way, seem to have an open bark which imbibes water from without readily. Some aerial influence is implicated, for we always find the injury at or just above the surface. Sudden change of temperature probably determines the actual crisis of the burst.—[Ex.

Scatter salt under the currant bushes. It keeps the surface moist and keeps off slugs and worms.

Ontario Fruit Growers' Association.

The summer meeting of the O F. G. Association has been held in Guelph. In the absence of the President and Vice-President, Mr. Buckle, of Ottawa, was called to preside. Several eminent fruit growers were present. The subjects for discussion were the following :—

What are the advantages of tree growth and shelter on climate, rainfall and the protection of growing crops?

What are the economical uses of woods other then pine, and what are their respective commercial values?

What trees can be best cultivated on barren lands, or lands too rough or too hilly for agrieulture?

What are the best methods of raising or planting forest trees, or hardening them to resist the effects of climate?

What trees are best adapted to the various sections of the Province?

What is the cost of tree planting per acre or in rows?

What foreign trees can be most profitably acclimatized in Ontario?

How can tree planting be best encouraged?

What means can be taken to popularize the study of forestry, particularly among the sons and daughters of farmers?

Mr. Gott, Arkona, read a paper on fruit in Lambton County. That county was rapidly becoming known as a fruit growing section. They had fine peach and apple sections around the town of Sarnia, and extending along the beautiful country to St. Clair Lake There was a rich yield of fruit every year, and by care and economy the people had always had plenty, and want was entirely unknown to them. The whole country was teeming with fruits. They were already beginning to ask what they are going to do with the surplus supply this year. One local grower had reported having grown 1,560 quarts of strawberries. There had been complaints of damage to crops by heavy rains in some parts of the country, but in Lambton nothing had occurred to mar the growth of fruits. The gooseberries were coming in in quantities and the crop was the largest ever known in that locality. Raspberries were also coming in in large quantities; gooseberries and currants were of excellent quality. The crop of apples this year would be good, but not abundant. Small fruits and winter fruits would be good. Not for many years had they enjoyed such freedom from insects. The cherry crop was not abundant. The common sour cherry was almost indigenous to Lambton county. Some large trees of improved varieties were bearing well. Lambton might be called the home for plums, and the crop would be the largest this year it had been for many years. There would not be a local market for the whole crop, but sellers could easily find another market to sell to advantage. To sum up, the fruit growers in Lambton this year had been favored with an early season, a remarkable abundance of fruit, and freedom from pests.

Woodland Flowers.

There is beauty, with an exquisite fragrance, in some of our wild flowers that is really delightful. A shaded border or a bed in a deep grassy nook, planted with such woodland flowers, is possessed of a rare beauty that must be appreciated by all.

Every one who desires to remove from the woods and other wild localities the finest native flowers, should mark the spot where the roots are found after the blooming season has ceased. This should be done while plants are made conspicuous by their blossoms Early spring flowers have now passed, but many are coming out that are to follow. Our ornamental gardens should not be made up exclusively of exotics; we have many native plants of surpassing grace and beauty, which interspersed in the wider portions of grounds add greatly to the attractions.

We prefer transplanting wild flowers from the woods in the fall. If taken up carefully with a ball of earth, they will continue their growth without any check, and early in spring they will bloom in the garden as in their native bed, before the ground would be in a fit condition for their removal if delayed to spring.

After repeated trials I feel satisfied that parafine, when employed with the care that such a powerful agent needs, is one of the greatest boon to gardeners for the destruction of the many insect pests with which plants are beset.

The Fumigation of Plants—its Dangers.

A lady has given me a "piece of her mind"—she has fumigated her plants and taken off every one of their leaves. As I recommend fumigation, she regards me as the cause of her trouble, and she expresses herself to that effect, in words that I need not repeat. I have insisted upon, and do still maintain the need of fumigating with tobacco, not only to destroy that pest of the plant grower, the green-fly and other insects, but to prevent their getting established. I have been particular in my advice to use it regularly twice a week, at the rate of about half a pound to every 500 square feet of glass, and I still adhere to this as the best and easiest way of keeping a greenhouse clear of insects. She had insects on her plants, and was bound to fix them, so she not only burned any quantity of tobacco, but, as she writes, "some sulphur." Her success was complete, for not an insect remains to feed upon the green pastures afforded by the leaves of her plants, and so thorough was the work that the pastures are as leafless and dry as a maple grove in December; and for this the lady thinks I am to blame!

While professional gardeners find fumigating with tobacco the readiest and safest method of ridding plants of insects, it sometimes happens that amateurs, from not following directions, or from want of experience, injure their plants Such had better make use of tobacco in some other form, and we give two methods, which will be found quite as efficacious as smoking. One of these is tobacco in the liquid form, prepared by steeping one pound of tobacco stems (such as are usually thrown away by cigar makers), in about five gallons of water; this gives a liquid about the color of strong tea, which, if syringed over and under the leaves of plants twice a week, will effectually prevent any injury from that pest—the green-fly. The other is to use tobacco dust, which is the sweepings of tobacco warehouses, and a very cheap article. This is most effectually applied on rose-bushes or other plants out doors in the morning when the dew is on, or if used upon plants in the greenhouse they should first be syringed, so that the dust will adhere to the leaves. No special quantity is required, only care should be taken that the dust is distributed among the leaves pretty thoroughly, as no injury will result to the plants from its application, no matter how much is applied. For insects upon fruit trees, roses and other shrubs outside, tobacco dust is an excellent and cheap application. It is sold in quantities as low as $5 per hundred pounds, and is retailed in packages at 10c per lb. by most of the agricultural and seed warehouses.—[American Agriculturist.

Pruning and Training the Vines.

Next to growing the vine, pruning and training are the most important. There are various systems, and all have their friends. That may be considered the best which is simplest and comes nearest to an equal disposition of growth and a proper balance of the supply and demand capacities of the plant. If the demand is greater than the roots can supply the result is a superabundance of feeble shoots, small and indifferent, ripened clusters of fruit, and exhaustion. People generally err in this direction by requiring the vine to attempt more than it can properly perform. One of the most difficult things about grape-growing is to make people believe they can get a crop of fruit if the vine is all cut away, as they term it. I suppose from observation that the majority of vines in the gardens of the people receive but the annual spring or winter pruning, and not enough of that. There are two important things to remember in pruning the vine. First, the cane producing the fruit this year grows from a cane of last year's growth. Second, the tendency of sap is to the extremity. If you leave a young cane two feet long in an upright position, the upper buds will grow the strongest and rob the buds below. Methods of training are innumerable. The principle of horizontal arms is an important feature in most of the prevailing systems, and has been recommended and practised in some form for the last fifty years. Probably it was more thoroughly explained in its various modifications by Mr. Fuller in his Grape Culturist, published in 1864, than in all other ways combined. In fact it is frequently alluded to and known as the Fuller system. The posts are set 16 feet apart, with two rails nailed over the lower 12 to 15 inches from the ground; the other on top of the posts about five feet high Small wires are stretched between the rails to which the young shoots are tied. The rows are six feet apart, and the vines 8 feet in the rows. The first year but one bud is allowed to grow and is kept tied up to stake. This is pinned down to the height of the bottom rail and two buds allowed to grow and tied up as before. The third year these are cut off to three or four feet, according to the strength of the vine, and laid down and secured to the bottom rail of the trellis for arms, the buds from these being trained to the wires as they grow; the annual pruning being to cut them down to two buds, and having two canes grow every year from each spur. The chief objection to this system is the care and labor attending it.

A simple and very popular method is what is called the Kniffin system. But two wires are used, the first. 3 feet 6 inches from the ground; the top one, 5 feet 8 inches. The growth and pruning of the vine the first year by this system are the same as the preceding. The second year three canes are grown, two for arms for the lower wire and the third to reach the upper wire, from which the arms for that wire are to be grow the next year. In other words the vine the second year resembles the letter T, and the third another T on top of it—thus T

T

These arms are eighteen inches long, and the annual pruning consists in cutting off the arms up to the shoot next to the trunk and bending that down to the vine for a new arm. The distance of vines apart is nine feet by nine for the Concord.—[Ex.

The Pelargonium.

The Pelargonium may with perfect justice be styled "everybody's flower;" for from the cottager's window to the palace of the Queen the Pelargonium is a welcome visitor. For window culture the free-flowering varieties of dwarf habit are the best, and those that make stout short-jointed growths. It ought also to be borne in mind that nearly all plants of this character detest a close atmosphere, and whether in the greenhouse or in the window require abundant supplies of fresh air all through the growing period. It ought to be known that a close atmosphere conduces to the rapid development of green-fly.

First: Over-potting and using an unsuitable compost. Over-potting is a common error with those who are anxious to grow large well-flowered specimens. You cannot get a mass of flowers at one time if the plants are over-potted. The growers for market show us every year what can be done with pots 5 and 6 inches in diameter; and exhibitors have grown the exhibition specimens to nearly 20 feet in circumferenee, and a perfect mass of flowers over the entire surface of the plants, in pots 8½ inches in diameter. The secret of success in each case is to be found in the potting material and watering. Good turfy, fibrous loam, four parts; rotten cow manure, one part; a little leaf-mould, and an 8 inch potful of crushed bones to each barrowful forms as good a compost as can be obtained.

Second: Unskillful watering. During late autumn and winter no plant should be watered unless it is fairly dry at the roots, and rain water should be used if possible; failing that, let the other water stand in the house twenty-four hours before using it, and all through this period admit plenty of fresh air, keeping the plants quite close to the glass. Attention to this will prevent spot and decay of the leaves; nothing looks worse than naked stems, which are in every case the result of bad management. As the plants begin to grow freely more water must be given, and when the flower buds are well developed apply it freely. When the plants are in flower they require water twice a day in hot weather.

The third error consists in the ventilation being badly managed. As a rule air must be admitted very freely; but then some one reading this may easily go to extremes, and allow cold frosty winds to blow directly on the plants. This must be avoided, as it predisposes the plants to disease and checks their free development. On the other hand, a close atmosphere is equally injurious—causes a spindly growth and brings green-fly on to the plants.—[Gardeners' Monthly.]

A correspondent of Vick's Monthly says that one teaspoonful of coarse-powdered saltpetre to a pail of water will destroy potato bugs, squash bugs and other insects. For roses it is unsurpassed. For maggots that work at the roots of squash vines, pour about a pint of the liquid on the root of each vine as soon as the pests indicate themselves.

Dairy.

Economical Rations for Milch Cows.

BY PROFESSOR L. B. ARNOLD.

The tendency of an increase in the richness of the common food of cows in milk is to increase the percentage of both fat and casein, to increase the yield as a whole, and to improve the quality of butter; but the relation between the butter and the other solid constituents of milk will be but little varied. The per cent. of water will be found the most variable element in milk. It will run down or up, as the food is rich or poor. This statement of the influence of feed is based on the general fact that the common food which cows are in the habit of receiving does not, as a rule, supply them with as much nutriment as they could appropriate. By giving food richer than the common fare more could be digested and utilized This is a fact of common observation and experience. But there is a limit to which the increase can be carried. It cannot go beyond what the vital power can take care of. Milk, like other glandular products, it is believed, is derived in part from the destruction of the gland substance, and in part by transudation from the blood, the butter globules in the former and the albuminoids in the latter way. Glands differ from other parts of the body in the rapidity with which they are built up and dissolved. The milk glands, in particular, are built up and decomposed rapidly, and as the milk tubes and blood vessels are only separated by thin walls of membrane, transudation is easy, and must vary with the composition of the blood. It will require but a short time, therefore, for a variation in the richness or poverty of the blood, by reason of a change in food, to begin to be appreciated in the milk. But the building up and destruction of the milk glands, and also transudation, will be fast or slow according to the supply of material in the blood, and must therefore go on essentially alike in each. The circumstances which tend to hasten or retard action in one will tend to hasten or retard it in the other. A constant tendency to equality of production in these two elements of milk must be apparent.

That an excess of fat-forming or flesh-forming material in the food of milch cows will correspondingly modify the milk products from normal rations has been strickly denied. But that an excess of fat or albuminous matter in the rations will induce a tendency to utilize it in accumulations of bodily fat or flesh, or in corresponding elements of milk, not only exists, but is capable of being cultivated and transmitted. We have living examples in the extraordinary tendency to the accumulation of fat in Shorthorn cattle and numerous varieties of sheep and swine, and the vast accumulation of muscle in the Clydesdale and Norman horses, and also in the milk of the Channel Island and Holstein cows—the former rich and fat, the latter in cheesy matter. This tendency, though not wide nor sudden, is certain and uniform. That an extraordinary supply of fat, or of albuminoids in the rations, will be felt in the corresponding elements in milk, has been proven by direct experiments in the German experiment stations, but the effect will not be in ratio in which it appears in the food. There is a strong tendency to uniformity in the composition of the blood, and a still stronger one to uniformity in the composition of tissue. Inequalities in the elements of food are always very much reduced before they become blood, and the variations in the blood are still further reduced before becoming structure or secretions, so that by the time food becomes milk, it approximates uniformity in the relation of its elements. Albuminoids in milk which come from transudations of blood, vary sooner and more widely than does fat which comes from the tissues. But since neither an excess of albuminoids nor fat nor fat-forming food in the rations, produces an equal excess in the blood and a still less inequality in the milk, such excesses in food are usually consumed at a sacrifice. So little of either kind can be utilized that so far as the increased value of the milk is concerned, they must be fed at a loss. True economy in feeding consists in balancing the elements of food according to the relative proportions in which they are respectively used in the production of milk and flesh, and then to feed all the cows can digest and appropriate.—[Ex.

Heifers From the Best Milkers.

We think all the best dairymen are agreed in regard to the profit of raising their own cows to supply additions to their herds. Very few have ever selected a valuable herd wholly by purchase. It has been said that if total depravity can ever be alleged against a farmer, it will be found in his representations on the sale of cows. We have often enumerated the important points in favor of home-raised cows; and one of the most important is the opportunity of selecting the heifer calves from the best milkers, both for quantity and quality. If the dairyman gives no heed to this point, he will perpetuate his worthless cows with his good ones, and thus never improve his dairy herd. A large majority of dairymen have cows in their herds that do not pay their keeping; and as they do not apply a test to the individual cows, they continue not only to keep them, but to breed from them. This is the most suicidal policy. Although we strongly recommend dairymen to raise their own cows, we are far from advising them to perpetuate their poor cows. It would be even better policy to give them away to a favorite brother-in-law. The heifer calves from only the best cows should be raised, and the weeding out should go on still further. When these heifers come into milk, those that do not come up to the proper standard should be discarded. A careful test should always be made of each cow in the herd, and of each heifer during her first period of milking. If the heifer has the appearance of a well-formed milker, and of having had a good dam, it may not be judicious to pass upon her during her first milking season if her quality is below the standard, for the next season may develop her satisfactorily.—[National Live-Stock Journal, Chicago.

Temperature in Butter Making.

One of the strongest arguments in favor of the low cooling, which allows of deep setting, is the smallest amount of labor involved in the management of the milk. By dropping the temperature from 10° to 15° below 60° the cream can be thrown up quickly and the milk quickly got out of the way, and a large saving in time and space and utensils effected. Low cooling has another important feature if it is done in pure air. If milk happens not to be just right it is liable at 60° to develop unfavorable conditions while the cream is rising. By keeping the temperature down, such changes are retarded and a better quality of butter made than would have resulted had the faulty milk been kept warmer. Low cooling, therefore, makes a more even quality of goods where the milk is liable to vary than high setting. But when the milk is all right, a higher flavored and better keeping butter is made by spreading the milk well—2 to 3 inches deep—and setting at 60° as nearly as may be.

Milk needs airing as well as cooling. The influence of the oxygen in the air ripens the cream for easy churning and develops flavor in the butter. I have proved this by taking milk from the same mess and immersing one part in oxygen gas and the other in carbolic acid gas and keeping them at the same temperature for 48 hours and then churning each separately. Butter from the cream in oxygen came in two-thirds of the time required for the cream in carbon and the butter was in every trial higher flavored and had better keeping quality. These results occurred without any reference to the presence of acidity in the milk or cream. The difference in flavor of cream became very distinct while it was sweet and the churning was also easier. The difference was the same after acidity developed as before. These results are significant. They indicate that what we have been in the habit of ascribing to acidity is, in fact, due to æration and consequent oxydation of the milk fats. When milk is spread out thin it receives a much better exposure than when massed in deep vessels, and oxydation is more effective at elevated than at depressed temperatures. The position maintained by many experienced butter makers that the best butter is made by setting shallow at 60°, is not without good reasons in its favor, however objectionable it may be on account of labor and inconvenience.

The experiments in setting milk in carbon and oxygen have a significant bearing upon the mooted question whether cream is best churned sweet or sour. Since the churning was facilitated and flavor and keeping quality developed only in the milk set in oxygen, if argues that exposure for oxydation is all that may be necessary to accomplish these ends, and that acid may yet be dispensed with, as well in butter making as in cheese making. All good butter makers now churn at least as soon as souring begins, or a little before, with a growing tendency to the latter practice. Milk which is kept till fermentation sets in is evidently on the road to decay, a condition it is not easy to conceive as of any advantage to the keeping or fine flavor of butter. That milk fats fresh from the cow, without any ripening, churn with more difficulty and make butter inferior in keeping and flavor to that from cream which has acquired some age, is notorious. That the ripening usually effected by giving age to the cream is due to æration is corroborated by the results of the centrifugal cream separator. The thorough æration which the cream gets in a few minutes in being rapidly whirled off from the fresh milk, secures the easy churning and high flavor which are only the result of time when the cream is not so forcibly aired. It demonstrates that neither time nor acidity is necessary for the desired ripening of cream, which observant butter makers concede to be essential to secure the best results, and leads to the inference that if we can get the easy churning and perfect flavor without the stale condition which accompanies fermentation, it is better to churn sweet than sour.—[N. Y. Tribune.

SETTING MILK FOR CREAM.—The question of which way milk should be set to raise most cream in the most economical manner has never been settled among creamery managers any more than it has with dairymen generally, so that it is rare to find the creameries of one section of country using the same method as those of another. The creameries of Northern Illinois and Iowa get the highest market quotations, and, as a rule, they set in very cold water, often using ice, thus following what is termed the Swedish plan. The old style of shallow setting is probably in use in double the number than any other is. All, however, seem to be working toward setting the milk cold and churning the cream sweet.—[Ex.

The first butter factory in Ireland, if not in the United Kingdom, says the New York Tribune, has been started in Dungarvan. Six "Holstein churns," capable of turning out upward of 4,000 pounds of butter daily, and two "kneaders" are worked by a 4-horse horizontal engine. Cream—which must not be older than twenty-four hours, as "sweet butter is the main object"—is supplied by thirty neighboring farmers, who co-operate on the following basis, and it is expected the result will be more uniformity of make than was possible with the defective home dairy accommodations so general in that conntry: "The cream supplied by each person shall be churned separately, and the number of pounds of butter it produces entered daily in his pass book, and a total made for each week ending Saturday. The society shall pay every Tuesday for butter made from cream supplied during the preceding week, at a rate per pound that will certainly compare favorably with home prices; and it is intended that contributors of cream may have their butter-milk back. At the close of each season there shall be a distribution of residue of receipts or profits among contributors in proportion to the total number of pounds of butter supplied by them during the year."

MILK AND LIME-WATER.—Milk and lime-water are now frequently prescribed by physicians in cases of dyspepsia and weakness of the stomach, and in some cases are said to prove very beneficial. Many persons who think good bread and milk a great luxury frequently hesitate to eat it for the reason that the milk will not digest readily: sourness of stomach will often follow. But experience proves, says the Journal of Materia Medica, that lime-water and milk are not only food and medicine at an early period of life, but also at a later, when, as in the case of infants, the functions of digestion and assimilation are feeble and easily perverted. A stomach taxed by gluttony, irritated by improper food, inflamed by alcohol, enfeebled by disease, or otherwise unfitted for its duties as is shown by the various symptoms attendant upon indigestion, dyspepsia, diarrhea, dysentery, and fever—will resume its work, and do it energetically, on an exclusive diet of bread and milk and lime-water. A goblet of cow's milk may have four tablespoonfuls of lime-water added to it with good effect. The way to make lime-water is simply to procure a few lumps of unslaked lime; put the lime in a stone jar, and add water until the lime is slaked and of about the consistence of thin cream; the lime settles, leaving the pure and clean lime-water on the top.—[Ex.

Stock.

Cribbing in Horses.

The vice of cribbing is very common, and is often a serious trouble to owners of horses which have acquired the habit from the disagreeable consequences of it. These are a constant indigestion, flatulence and unthrift of condition, which are produced by the irritation of the intestines by the air swallowed, not inhaled, but actually swallowed. Various theories have been proposed for the cause of the habit, and some of these have undoubtedly been misleading, because they have confounded the effect with the cause, and have, consequently, looked in a wrong direction for a remedy. Many persons, both among horsemen and veterinarians, have supposed the frequent, if not sole cause of cribbing to be the disagreeable, uncomfortable sensation in the stomach which results from chronic indigestion. Others have considered that the practice is a habit learned accidentally or by imitation from confirmed cribbers in the same stable. The latter opinion would seem to be the true one, because when a cribbing horse is prevented by any means from practising this habit, the objectionable results, viz.: impaired digestion and defective nutrition, disappear very soon, and the horse is improved in condition without the use of any direct means in the shape of medicinal treatment for that end. A writer in the American Veterinary Review, who has given special study to this subject, takes this view of it. He has found that the movements of the head in the action of cribbing are downward and made with the head elevated, and in such a position that the muscles which lower the pharynx can operate with the result of aspiring air. That if this downward movement is made impossible by the absence of any firm substance, such as a part of a hay-rack or manger, upon which the horse can rest or fix the jaws, so as to operate the muscles effectively, the habit is made impracticable and ceases. For the habit is not constitutional or hereditary and no case has been traced to such an origin, but it is decidedly one of accident and opportunity and of irritation, and is practised thoughtfully and intentionally for the peculiar sensations derived from it, probably of coolness produced by the passage of the current of air. This seems to be certain, because a horse placed in a stable with a cribber for his companion will soon learn the habit, and one left idle for the greater part of the time with abundant means for learning the vice will often become a cribber.

The remedy becomes obvious when the act is clearly understood. This is to avoid giving any opportunity either for acquiring the habit or for practising it; in the latter case it is soon forgotten. The manger and feed-box should be placed so low that the required downward movement of the head cannot be made. To place it on the floor is a common practice, but is inconvenient and wasteful. From some study of the case, the writer mentioned has devised a hay-rack and manger which is unobjectionable and effective. It is a rectangular box about 33 inches long, 15 inches wide, and 6½ inches high. The top of this box is not over 19½ inches from the floor. This height is insufficient to enable the horse to execute the downward movement of the head, which is required to effect the muscular contraction by which the pharynx is lowered so as to permit the air to be inspired. This arrangement is both a preventive and a cure, and renders unnecessary all the unsatisfactory methods such as straps, muzzles, &c., which have been heretofore relied upon.—[Ex.

A Lamentable Evil.—There is a widespread and growing evil in this country—that of *overtaxing* the generative powers of stock animals. It has been too much the practice to keep bulls on the principle of quick returns and small profits. Farmers have generally felt unwilling to pay more than the merest pittance for the service of a bull, and the owner, to save his finances, has been obliged to enlarge custom until the procreative powers of many choice bulls have been destroyed by the time the animal should have been in his prime. It is not necessary to look up facts to prove the hurtfulness of such practice, for it is manifestly certain that an animal which is prematurely and gradually brought to a condition of impotency must, some time before that period, beget defective stock. It undoubtedly generates in the male offspring a tendency to the same weakness, and in the female may have something to do with laying the foundation, in constitutional weakness, for that scourge in the dairy districts abortion. —[Ex.

Corn-Fodder.

The practice of growing a crop of corn-fodder to supplement the failing midsummer pastures is growing more and more in favor every season. During July the feed becomes dry and brown, and cows fall off in both milk and flesh if there is not some provision made for tiding over the time until fall rains have revived the pastures, or the cattle are turned into the newly-seeded fields, greatly to the detriment of the latter. This habit, with the equally pernicious one of allowing stock to roam over mowing lands from the time the hay is cut until cold weather, is gradually giving way to the sensible one of providing fodder crops. The stalk crop is of great importance in this connection. Corn for feeding, both in a green state during summer and dry one during winter, can hardly be overestimated in value.

There is, indeed, but little if any difference of opinion as to the merits of fodder-corn, though their exists a variety of practices concerning the manner of raising and curing the crop. Sweet corn has come to be preferred over other varieties for this purpose, as there is not near the waste to this fodder there is to the gourd-seed sorts. For early use the first planting of fodder-corn should be early, of course, but the seed can be put in any time during July with good results, as it makes a heavy growth on land comparatively dry and in dry weather.

All forage crops give best results which are cut before they are out of bloom. Corn is no exception to this rule, but, owing to the difficulty some experience in curing it in an immature state, it is often allowed to become too ripe before cutting. Chemical analysis has demonstrated that fodder deteriorates in two ways by standing—viz., by the lessened proportion of albuminoids, and by decreased digestibility. Another objection to permitting the stalks to stand until the ears are perfected is that they grow so tall that they are troublesome to handle, and are more liable to fall and lodge under a hard storm. Furthermore, early-cut fodder is in itself a complete ration, rich enough in albuminoids to make good feed without mixing with other materials. Last, but by no means least, the greener the crop when taken off the land the less exhaustion to the soil.—[N. Y. World.

Foot Rot in Cows is often troublesome in dairies; one form of it is caused by irritation in the feet, produced by permitting the cow to stand in filth, or by pasturing her in a wet field. This form is similar to the "mud fever" in horses. But a more serious disorder in the feet is produced by a fever known as aphthous fever, which causes eruptive vesicles, or watery blisters, on the coronet and between the claws of the hoof, and sometimes on the lips and mouth These blisters break, run together and form ulcers. The treatment is to give the cow a brisk purgative, as 16 ounces of epsom salts, and follow it by daily doses of one ounce of hyposulphite of soda for ten days or two weeks. The feet are to be washed with soap and water; any proud flesh in the ulcers should be removed by touching them with carbolic acid, and the parts dressed with ointment which is as follows: Melt two ounces of beeswax, two of resin, and half a pound of fresh, sweet lard; add four ounces of turpentine, stirring it with a wooden stick very thoroughly while it is hot; then add an ounce of finely-powdered acetate of copper (verdigris); stir well, and strain through a coarse cloth. Apply this with a feather. The foot should be protected with a bandage passed through the claws and tied around the ankle.—[Ex.

Chicago Fat Stock Show.—The third annual fat stock show will be held at the Exposition Building, Chicago, November 15—20, 1880. The Illinois State Board of Agriculture, under whose auspices the shows have been held, are completing arrangements for the coming show, which promises to be a great improvement over previous exhibitions, both as to number and quality of the animals competing. The Board has very wisely determined to exclude from competition aged animals that have passed their prime for the greatest profit to the feeder, or for furnishing the consumer the most desirable quality of roasts or steaks.

During the month of June there were shipped from Montreal to Brieain 9,281 head of cattle, and 7,991 sheep.

Summer Feeding Stock.

Animals are usually pastured in the summer time. This is a cheap and easy method of feeding, which may serve the purpose excellently where the land is cheap and labor is dear, and where the product is low in price. But under other circumstances pasturing alone is only profitable when the pasture is unusually good and is not overstocked. A poor pasture is a very costly property. If five or six acres of land are required to support a cow, the cost of the land eats up the profit, and the labor of picking a living during the whole day on food, without rest, is burdensome to the cow and exhausts food and vitality that should have been used to produce milk. In any way in which it is considered a poor pasture is unprofitable. Even in the best there is waste, for a large amount of the herbage is trodden under foot and fouled, so that well-fed cows refuse to eat it. It is true that this is not all waste, for the refuse may be eaten off by sheep if the pasture is divided, and at the worst the grass makes excellent manure when plowed in; but pastures are not all plowed, and are best when made and treated so as to be permanent. So that the feeding of the cows upon pasture is to be regulated in some manner with regard to the most economical use of the land and the profit from the cows. Where cows are wholly pastured in the summer season it would be found convenient to divide the land into small fields by means of portable fences or hurdles, and when the grass is eaten down in one and the cows need a change, to turn them into another, using the abandoned one as a run for horses, colts, or sheep, until the waste grass is consumed. The tufts left where the ground has been covered by the cows' droppings should be mown off and spread, and the grass will then be eaten by the sheep, or may be gathered and given to the pigs. The droppings should be broken up and spread, and if a handful of salt or lime is scattered about each of the soiled places, after a shower of rain the ground will be sweetened and the new grass will be eaten on a return of the cows to that part of the field. By this method a pasture may be made to carry double the number of cows that the field would have done if it had been wholly and continually overrun. A saving is also made in the wear and tear of the cows, which is equivalent to an expenditure of so much milk and butter; for they do not roam over so much space, and having better and fresher grass they fill themselves sooner and lie down and rest. But it will be found profitable in cases where the milk and butter are sold at good prices, as in the vicinity of towns and villages, to help out the pastures by some concentrated food. Two quarts of grain or corn meal given daily to each of five cows will be equivalent to adding one-fifth more to the pasture, and six cows thus fed may be kept in a field that would otherwise feed but five. This is especially useful where land is costly and the interest on its value amounts to something worth considering. This extra food will also add one-fifth to the quantity of milk produced, so that the cost will be well repaid.

Dairies and Bone Manure.—An English paper, in commenting upon the subject, remarks that the Cheshire dairy farmer, by free use of bone manure laid on the grass lands, makes his farm, which at one time, before the application of bone manure, fed only twenty head of cows, now feed forty. In Cheshire, two-thirds or more, generally three-fourths, of a dairy farm are kept in perfect pasture, the remainder in tillage. Its dairy farmers are commonly bound to lay the whole of their manure, not on the arable, but on the grass land, purchasing what may be necessary for the arable. The chief improvement, besides drainage, consists in the application of bone manure. In the milk of each cow, in its urine, in its manure, in the bones of each calf reared and sold off, a farm parts with as much earthy phosphates of lime as is contained in half a hundred weight of bone dust. Hence the advantage of returning this mineral manure by boning grass lands. The quantity of bones now commonly given in Cheshire to an imperial acre of grass land is twelve to fifteen hundred weight. This dressing on pasture land will last seven or eight years; and on mowed land about half that period.

The Oxfordshire Downs now occupy a high position among the mutton breeds of sheep. At the recent Oxford show in England they were the best represented of 18 classes and took the "champion prize" for the best ewe and ram.

NOTICE TO CORRESPONDENTS.—1. Please write on one side of the paper only. 2. Give full name, Post-Office and Province, not necessarily for publication, but as guarantee of good faith and to enable us to answer by mail when, for any reason, that course seems desirable. 3. Do not expect anonymous communications to be noticed. 4. Mark letters "Printers' Manuscript," leave open, and postage will be only 1c. per ½ ounce. We do not hold ourselves responsible for the views of correspondents.

Feeding Pigs for Profit.

SIR,—The Canadian farmers as a rule have far from a perfect mode of handling their pigs. They are not careful enough concerning the quality of the stock they breed from, or how they handle them after they are farrowed; the main object with most farmers is to get a sufficient number of hogs to kill, so that their families will be supplied with meat the coming year, few making a business of raising, to any extent, hogs for the butcher or packing house, many believing that there is no profit in such an undertaking. However, the setting price of grain and feed-stuff, compared with the price of pork and the cost of feeding, must determine this in the various vicinities. Still, it behooves the farmer to so manage his hogs that he may obtain the maximum profit. From them this cannot be gained by half-starving, at any period. To produce the best, nothing but superior animals must be used as breeders; this does not necessitate a large outlay for pure-bred stock. What farmers should do is to carefully grade up, using only the best males, and selecting from their stock the best females to breed from; a choice brood sow may be kept as a breeder until eight or ten years old, with profit, but should always be kept in good condition. No matter how well bred your animals are, if you do not feed well they will degenerate. The same argument is also truly reversed, viz.: your stock may be grades, but, with careful feeding, year after year, they will become improved in all respects. And ten-fold more will they improve if a careful selection of breeding animals is always made; one improper cross will do much injury. Your brood sow, while suckling, should be kept in clean, dry quarters, and be fed well on soaked or boiled peas, corn or barley. We prefer them boiled, as they are not as heating, and a little wheat bran, well stirred into each feed, is certainly an improvement, as it aids in keeping the bowels open; besides this solid feed, as much house slops should be given as she will drink; skim milk and butter milk are of course preferable; raw grain, especially peas or corn, should not be fed at this time, as it fevers the dam, and is believed to be the cause of sows killing and eating their young. A little green feed or cut roots can be given to advantage at times. The young pigs should be taught to eat at as early an age as possible, and may be weaned at six weeks old; some wean even earlier; but when a sow is large and has an abundance of milk, we prefer to let them suck until they are eight weeks, but feeding the sow abundantly, and always in a long level trough, so that the little ones can get a good chance to eat. If you intend to kill your spring pigs this fall, you should force them along as fast as possible. The above mentioned feed will also be excellent to fatten; ground oats and wheat middlings are good, and also new corn when in the milk. But should you intend to keep the pigs over winter, we would recommend a more moderate course of feeding and less stimulating grain. When they are three months old, turn them into a clover plot, all the better if it has a running stream through it, and give them what milk or slops you can spare. They must not be allowed to go thirsty. Enough grain feed should be given them to keep them in good growing condition. They will not need much if the grass is good; peas and oats ground, equal quantities of each, makes, perhaps, the best feed that could be given. The forcing system is believed to be the most profitable to the farmer; but the best marbled meat is undoubtedly procured from the slowly fed animals. Pigs in all cases should be fattened and killed before cold weather sets in, as it takes decidedly less food to produce the same results in warm weather. PROGRESS.

Raising Turkeys.

SIR,—Will you give me some information in regard to turkey raising. I always lose a great many, but this year am particularly unfortunate. They begin to droop their wings, refuse food and die. I keep them in till the dew is off the grass; they have never been out in a shower; I feed them corn cake, eggs and curd till two or three weeks old, and am now giving cornmeal mixed with milk. What can I do with them, as I fear I shall lose them all? Thomberg, Ont.

[Mr. Lewis says, in the People's Practical Poultry Book: "Turkeys, when young, are very tender and need more than the 'slip-shod' attention awarded them by many farmers. The first and most essential thing after hatching is to keep them in a dry and warm location. For the first three or four weeks great care should be taken by the breeders to keep them from the scorching sun, drenching rains, heavy morning and evening dews. Moisture internal or external is generally certain death to the chickens. Cleanliness of coop should be rigorously followed; dry, gravely land is the best place to keep them on." The American Poultry Companion suggests "that as soon as the young are removed from the nest they be immersed in a strong decoction of tobacco, taking care that the fluid does not enter the mouth or eyes. Repeat the operation whenever they appear to droop. At two periods of their lives young Turkeys need more care than any other. The first is about the third day after they are hatched, and also when they throw out what is termed the 'red head,' which they do when about six weeks of age. This is a very critical period, much more so than the time of moulting. At this time, therefore, their food must be increased and rendered more nutritious by adding boiled egg, wheaten flour, or bruised hemp seed. The English farmer succeeds well by feeding his brood a 'mush' made of equal parts of cooked oat and barley meal. This crisis once past the birds may be regarded as past danger. In preparing the food for the young, do not feed slop food of any kind. Many breeders feed loppered milk, but that should be scrupulously avoided, and should not be fed under any consideration. Sour milk boiled to a thick curd is good, mixed with Indian cornmeal, seasoning the same occasionally with black pepper. They should be fed often and made to eat up clean what food is given them before repeating the feeding. The food should be thrown on the ground, not in a trough, so that in picking up their food the gravel that adheres to it will aid their digestive organs to perform their functions. Never feed Indian meal in an uncooked state, for it is liable to bake in the crop and cause death. Water should be in shallow dishes, or old tin pie-pans near the coops, so that the young can satisfy their thirst whenever inclined. At six weeks or two months old the young turkeys may be considered safe from over-feeding, and should then be fed cracked corn, boiled potatoes, refuse from the table, buckwheat and fresh boiled meat occasionally." Our correspondent has perhaps been feeding raw meal or sloppy food. If not, probably they are suffering from Chicken Cholera. See our article on cholera under poultry department.]

SIR,—(1) Is there any cure for a cow that leaks her milk; if so, what is it? (2) I have two cows that have swellings apparently in or on the veins of their legs. One has had quite a bunch on the hind leg for over a year. It was just by the hock joints outside, but this year it is spreading fast, and other little lumps are forming around it like knots in the veins; the other cow has only the little knots on the front leg. They are not lame nor tender at these spots. Is it anything hereditary, as I am breeding from the cows? (3) The same cow this spring got weak and sickly after calving, shrank her milk and lost flesh. Her dam was that way every spring, and I sold her. I gave her a dose of salts each year, and she would come round all right in a month or so. Some folks called it hollow horn and wolf-in-the-tail. I think it was a slight attack of milk fever. What do you think it was?

J. T. J., Bertie, Ont.

[No. 1. There is no cure for a cow that leaks her milk. They are often benefited by applying astringents to the teat, such as alum water or oak bark tea. Apply cold. This, in many cases, has been found effective, but not to be relied on for a cure. No. 2. Though the lumps are in no way dangerous the disease is hereditary. No. 3. Your cow suffered from a slight attack of milk fever.]

To Build a Root House.

SIR,—Will you please inform me of the cheapest plan of building a root house that will hold about twenty loads of turnips, as I have but a small farm. A SUBSCRIBER, Stratford, Ont.

[A cheap and serviceable root house can be built as follows:—Select a dry and convenient site. If the land be dry enough, so that there will be no fear of surface water, an excavation may be dug in the ground eight feet wide and from two to five feet deep, as circumstances will permit. Then procure cedar posts, or any wood that will not rot readily. Set the posts in the floor of the root house so that their outsides may be even with the wall of earth when it is dug down. Let the posts extend five feet above the floor, placing them six feet apart the entire length of your pit. On the top of these posts nail cedar rafters, each five feet long, made of rails or poles cut so as to match at the top. If your land is such that you cannot dig deep, place cedar rails along the outside of your posts. Lay a layer of straw over these—pea straw is the best. Throw enough earth against this to turn the frost. Proceed in the same way with the roof, using cedar rails, which must be twelve feet long, so each of their ends will catch on a rafter, and their middle rest on one. If you sink the pit much below the surface, and the soil is mellow so that it will trouble you by falling in, you can nail slabs or cedar rails from post to post along the insides. A pit built of the above dimensions will hold in round numbers 410 bushels for each ten feet in length, or 41 bushels per foot. By referring to these figures you can build your pit to hold any required quantity. The principal point is to see that the posts are well set, and that they and the rafters are strong, or else your pit will cave in in a few years from the weight of earth necessary to keep out frost. Leave holes at suitable intervals and of a proper size in the roof to pitch the turnips in. Boards must be provided to cover these holes with when the pit is full. If your soil will permit, it will be advisable to sink the pit three or four feet, at it will be easier protected from frost, and being low will render unloading easy. If it is necessary, you should build the pit of the exact dimensions described. We have given them to illustrate the principle. At the end where you desire to enter the pit, build an alley way, which must fit tightly against the root house, and be of a convenient width and length. Line and stuff so as to be frost proof. We have found it preferable to have a door at each end of the alley. Close up and protect the other end as you did the sides, except about eighteen inches at the top, which is better left open for ventilation, and may be closed by a bundle of pea straw, or a load of manure when necessary.]

Poison Ivy.

SIR,—What are the distinguishing features of the plant called poison ivy? Is it as dangerous to touch as it is said to be? I am as yet unacquainted with it, but I am informed it is very common in the woods in this country. ENQUIRER.

[The poison ivy is very poisonous to some persons; they are poisoned by not touching it at all, or even it is said passing near it, while others may handle it without being afflicted by the contact in the least. The poisonous property of the plant is owing to a volatile acid; its effect is an acute inflammation of the skin, often accompanied by a great swelling. The effects remain sometimes for months, before the poison is completely removed from the system. The usual remedies are cooling purgatives and an external application of lead water. An application of a solution of hops has been known to prove an effectual remedy when all other remedies failed. The plant has sometimes been mistaken for Virginia creeper, to which it bears no slight resemblance. The distinguishing feature is, that the poison ivy has leaves of three leaflets; whereas the Virginia creepers' leaves have five leaflets. Persons have been poisoned by mistaking the poisonous for the harmless species. This plant is of the genus *Rhus* or sumach. There is also an upright plant that is poisonous.]

SIR,—Could you inform me whether there is a machine on wheels for hauling stumps off the field after they have been drawn out by a stump machine. I have written to various places but cannot get any information.

T. S. S., Campbellford, Ont.

[Perhaps some of our readers could inform us. Our manufacturers should let themselves be heard from through the advertising columns.]

Stock at the Ontario Agricultural College.

SIR,—I recently paid a visit to the Ontario Agricultural College and Experimental Farm. Leaving Guelph at 3 p. m., after a pleasant drive, we arrived at the college building. Our first duty was to find Mr. Mills, the President, who kindly showed us over the building and as much of the farm as our limited time would allow. The College building is a large, fine looking strncture, and kept with neatness and order within and without. There is now an addition being added for a dining hall, &c. The grounds surrounding the College building are spacious, and contain flower gardens, ornamental trees, &c. We first inspected such of the stock as was near, and must say we were somewhat disappointed in them. The Durhams are small and only second class. We saw two Angus Polls that were good, especially a heifer. All the other purebred cattle we saw were, with a few exceptions, only ordinary. The same may be said of the grades. Among the sheep the first we saw were fine yearlings, two Oxford Downs and three cross-bred animals. These were being fed very heavily for experimental purposes, and were very large, growthy sheep, and well cared for. We next saw their breeding rams. The Cotswold, the President told us, was not a good breeder. We would not expect he would be. Such a sheep as he rarely produces good, easy feeding lambs. He is the very opposite to what he should be in many respects—long in the leg, very coarse and loose in his general make up, with a strong fleece, not at all fashionable. Our best demand for Cotswolds is from the United States, and the American breeders always want a fine, long, lustrous fleece, and in form the best animal for profit is a solid massive beast rather on the fine than coarse side. The Leicester ram is a better animal than the above, though not a first-class sheep. The Oxford Down ram is not a first-class animal of his kind, but the latter two are said to be good breeders. We next visited the yearling rams. The Cotswolds were not good—not a truly first-class sheep among them. The Leicesters were somewhat better as a class, though there were a few very poor specimens, and a few rather good ones. The Downs as a class were superior, with a few good specimens. The experimental plots of fall wheat were next visited. Among that which we noticed particularly the Clawson had winter-killed the least, but all was more or less rusted—some so bad as to be nearly worthless.

STOCKMAN.

From Manitoba.

SIR,—Crops are looking very well here to be mostly on new land, and the seeds we got from you are doing remarkably well, especially the sugar beet; they promise to be a great crop. Roots of all kinds seem to do well here. We got a very fair crop upon the first breaking.

J. B., Little Saskatchewan.

SIR,—Please inform me the cause of horses slobbering, and how it can be prevented.

S. S., Wilkesport, Ont.

[Slobbering in horses is often caused by the outer edge of the molar teeth becoming sharp, and in moving the cheeks the sharp edges of the teeth will cut them and make them sore, causing the horse to slobber; or it may be caused by the animal having a diseased tooth, either hollow or ulcerated. In the latter case the tooth generally rises up and stands higher than the other teeth, causing much pain when the animal feeds. When young animals change their teeth the inflamed state of the gums will cause slobbers, but it is more commonly caused by something it eats. A small white clover will cause it in excess, or almost any kind of plant of a hot nature, also lobelia, &c., caustic alkalies, acids and salts, or the compound of mercury used externally.

Discover and remove the cause. Use astringent washes and give access to cold water. In obstinate cases give a course of tartar emetic, opium, chloride of potassa, or iodine of potassium.

Rub the glands beneath the ears and under the jaws with iodine ointment.

SIR,—I have taken your paper for eight years, and like it very much. Crops are looking well in this neighborhood. I have the best wheat I ever had. Commenced cutting on the 30th of June.

L. B., Corinth, Ont.

Top-Dressing.

SIR,—The members of the South Ontario Club report a great difficulty in securing a good catch of grass and clover seeds. A member said he had instances when clover seed had come up and reached to the second leaf, and then hot, dry time completely destroyed it. The next year, when the wheat was a foot high, the clover began to disappear again, and he top-dressed it with plaster, and it revived and grew remarkably. Another had a field which he sowed three succeeding years with clover seed. It came up each time, yet in the dry time it completely disappeared. Another had top-dressed over half a field seeded down, and then the clover was much better than on that undressed.

The plaster prote ts the roots of the young plants from the drought, that has such an injurious effect, and attracts humidity and ammonia from the atmosphere.

J. D.

Watering Newly Set Trees.

The inquiry is made, "What objections have you to watering newly set trees in a hot dry summer? My young trees are suffering from drouth."

[There are two principal objections. One is, that the watering is intermittingly applied, and does not furnish a constant and uniform supply of moisture. The surface is wet one day and dry the next, and a hard crust is thus formed which does more harm than good. The other objection is, the watering scarcely ever reaches the mass of the roots, but soaks only an inch or two of the top soil. One hot day will dissipate it. The only way in which water can be advantageously applied is first to scrape or spade off all the surface soil down to the roots and as far on each side as the roots extend, or to the extent of the hole dug for planting. Then pour on water till the roots and earth are sufficiently soaked, and replace all the earth, leaving an even, mellow surface. In this way the roots will be benefitted, and the moisture will remain longer. Then mulch the whole surfaee four or five inches thick. It may be necessary to repeat the operation in a few days, as the soil surrounding the wet portion grad ually absorbs the water. This watering is not often necessary, a mellow surface and mulching being commonly sufficient. We have known newly set cherry trees actually killed by surface watering, when mulching would have saved them.—Ex.

A. R., Lindsay, Ont., asks:—1. How can I most effectually destroy plantain that is spreading itself over a small lawn?

[A quick and effectual method to destroy plantain and other weed pests on lawns is to cut the plant off at the crown, and drop on the top of the root two or three drops of kerosene oil. The lawn will not be defaced by digging, and the work is at once completely done; the root dies as surely as if struck by lightning.]

2. How may gravel walks be kept free from grass and weeds?

[Weeds on gravel walks may be destroyed and prevented from growing again by a good dressing of salt. The lowest priced salt is as good as any other for the purpose. This will save some labor, as hard picking, raking and rolling. One application of salt early in the season will keep the walks free from weeds. We prefer, however, scuffling, raking and rolling once a week, as this method greatly improves the appearance of the walks, and also the adjacent ground.]

L. W. S. asks how to trim squash vines, and if they will produce better when trimmed?

[Theoretically squash vines ought to do better when trimmed than when left to themselves. Pinch the tip of the young plant when it has four leaves. Spread the four branches that are thus produced at equal distances from each other about the plant. Pinch them again when about a foot long, and allow not more than two squashes to set on each branch. By judicious trimming, which can hardly be explained upon paper, seek to direct the nourishment to the fruits instead of to the production of vines, and when the ground is covered, allow no vigorous shoot that has no fruit to expend the strength of the plant. These same directions are also applicable to the care of melons. The number of fruits that can be grown on one plant will, of course, vary with the vigor of the variety. It is by just such care that European gardeners are enabled to produce from five to eight handsome melons under a single hot-bed sash.]

Miscellaneous.

EMIGRATION AND IMMIGRATION. — THE TIDE TURNED.—The Weekly Journal, Annapolis, N. S., July 17, says:—The Boston steamers last week could not bring all the passengers that wanted to come to Nova Scotia from the States. The exodus is now an *inodus*.

Montreal, July 13. The shipments of cattle and sheep from this port to Great Britain during the month of June were 9,281 of the former, and 8,211 of the latter. The shipment during the first days of July were 1,790 cattle and 7,991 sheep.

The barque Bella Mudge, which cleared at the Custom House yesterday for London. took a cargo of 10,102 cases of preserved lobsters, valued at $50,008, besides 576 pieces birch timber and 5,999 pieces deals, valued at $2,749. The total value of the cargo was $52,757.

The Anchor steamer Anglia, which sailed for London via Boston, July 17, took as part cargo 8,204 cases lobsters, valued at $38,786, besides 18 casks sealskins, valued at $2,600, and 67 cases Acme skates, valued at $11,372, or a total value of the cargo of $52,748. The total value of the two cargoes amounts to $105,705. The brigantine Genoa is also taking a cargo of lobsters for London.

A practical gardener pinches off the ends of the young shoots of bearing grape-vines as soon as they have made three leaves beyond the last bunch of fruit. His argument is, if this is not attended to the vines will make a great amount of wood at the expense of the crop of fruit. He furthermore keeps young vines which have not come into bearing carefully tied up, for if allowed to fall on the ground and blow about they do not make a thrifty growth.

SHOULD FARMERS BE SHIPPING MERCHANTS ALSO? The following news item we meet with in a Nova Scotia journal:—We are sorry to learn that the last shipment of potatoes to England by the Grangers was a failure. Not only did the shippers receive nothing for the cargo, but were even obliged to pay for one-half the cost of the barrels. We hope that they will be more successful next season.

Potato flour, or the dried pulp of the potato, is attaining great importance in the arts. It is stated that in Lancashire, England, 20,000 tons of it are sold annually, and it brings at present in Liverpool about double as much in the market as wheat flour. It is used for sizing and other manufacturing purposes, and when precipitated with acid is turned into starch. When calcined it is employed as a dressing for silk.

KEEPING A RECORD.—A habit of noting the ancestors and date of birth of the larger stock of the farm, even though it be not "full-blood," is a useful one. If a record is of so much value for the best stock, it is at least worth the keeping for the good grade cow, or the mixed bred horse. It is often a great convenience to know to what animals a cow in question traces her parentage, and it may be of money value to be able to show the record.

The Farm Journal (England) says:—It is curious that, in all the enterprise witnessed in the breeding of the various classes of horses, really fine carriage horses command a higher price, relatively, than any other. They are always scarce, and for the reason, as we believe, that the average farm horse is undersized. Carriage horses are produced by crossing staunch thoroughbreds upon large, handsome, roomy mares. There is money in this class of horses.

The investigation into the disease known as pluero-pneumonia among cattle, ordered by Congress, has terminated. Among the facts ascertained are these—that it is a contagious and infectious lung fever, as communicable among cattle as small-pox among mankind; that it is an imported disease, which may incubate as long as sixty days; that the only protection is the destruction of all infected cattle: it has never existed west of the Alleghany Mountains; that it now exists in New York, New Jersey, Pennsylvania and perhaps in Maryland, Virginia and the District of Columbia; that cattle may be transported through these States to the seaboard under proper restrictions, without infection.

Poultry.

Chicken Cholera.

So prevalent is this disease in the poultry yard that we give unusual space to the general appearance of the fowl affected, its contagious character and the producing cause. The Journal of Agriculture thus describes the general appearance :—

The fowl droops and mopes, the feathers "stare" —that is, they present a rough, unplumed appearance; the parts of the head not covered by feathers turn dark or pale, mostly dark ; the fowl is weak and much prostrated.

Digestion is arrested; food is refused, the crop is filled with sour or fermenting ingesta; so are the other organs above the liver. Diarrhea of a mild character is seen at first, which gradually increases in severity to the end. The droppings are of a yellowish-green color, assuming a more decidedly green and frothy character, and continue so as long as the fowl lives.

The circulation is much disturbed; the pulse is rapid and feeble; high fever exists, attended by great thirst.

The disease is generally developed abruptly in the flock.

In flocks where the disease is about to make its appearance, very careful and close observation will discover that the development of the malady is first denoted by listlessness, some derangement of the plumage, yawning or gaping, an indifference to food and thirst.

These symptoms soon become more prono unced, and in a short time the characteristic intestinal evacuations oppear, succeeded by the discoloration of the comb. The blood circulates with difficulty, and the changes in this fluid incident to respiration take place imperfectly: hence the feebleness, the congestion, diminished temperature, thirst, apathy, vital prostration, and death.

Producing Cause.—Dr. Dickie in his work on cholera claims that the disease is produced by a cause existing without the fowl, and is miasmatic in character, and is absorbed into the blood of the fowl by breathing; that there is a special cause for this disease, as there is for all other well-defined epidemic diseases, and claims that it is a special miasma, which, when introduced into the blood, produces the special poisoning. Malarial or miasmatic poisons do not usually produce their effect upon the system at once, but require some time, longer or shorter as the case may be, to develop disease.

There may be cases where the poison of the miasma is so malignant as to produce almost instantaneous disease upon exposure; but this is not the rule as regards the action of miasmas in temperate climates. They require some time, and a period varying from a few days to several weeks, or even months, may elapse between the time of exposure and the appearance of disease.

On the other hand, a miasmatic poison (or virus) may accumulate in the system without producing any perceptible effect, and then suddenly manifest itself as if by an explosion, and life may be destroyed before reaction can take place.

Having come to the conclusion that the disease is epidemic—that is that it is produced by a cause existing without the fowl, and is miasmatic in character and origin, as every distinct epidemic disease depends upon some special miasmatic poison as its cause, he proceeds as follows :—

1. Poultry cholera is obviously an epidemic disease.

2. The special character of the disease is well established; it therefore depends upon a specific cause.

3. The disease is not communicable from one fowl to another, hence it is of miasmatic origin.

4. The primary effect of the poison is to produce morbid changes in the blood, and secondarily to affect local organs. The disease is essentially a constitutional, and not a local one.

5. The poison may accumulate in the blood for a considerable period without producing any appreciable effect, and, after a time, suddenly manifests itself by the death of large numbers in rapid succession.

6. While the miasm that affects poultry cannot be defined or described we believe it to be generated or formed on premises where the disease prevails: it is of local origin.

7. The cause of Poultry Cholera is therefore first a miasm, and secondly, a special miasm. The disease is produced by, or is the result of blood-poisoning, by the process of fermentation.

The subject is one that is not thoroughly understood by poultry breeders, and we recommend them to study up the matter for themselves. The more they look into the subject, the better prepared they will be to fight it.

In connection with this subject we would merely notice an alleged discovery by M. Pastuer, of a prevention of Chicken Cholera by inoculation. By a peculiar mode of cultivating the microbe (microscopic organisms) he had succeeded in obtaining an enfeebled microbe, which is incapable of killing the fowl, but of protecting it against the cholera contagion. The fowl inoculated with the modified microbe does not die ; it is not even made sick. He has not disclosed his method, but we hope, with the Poultry Monthly, we will be able to make it known in an early publication.

Care of Fowls.

Old fowls now need special care. The hens have parted with a good deal of their flesh, and vitality in the process of laying. Before the moulting season sets in they need rest and careful feeding. The sexes, especially of the large breeds, should now be separated. As hens have ceased to lay to any great extent, and are unprofitable, all that are not needed for the breeding pens next year should be fattened and sent to market as soon as possible; they will now bring a good price, and their places can be more than filled by the pullets that are fast growing into "henhood." Fowls at this season should have their liberty as much as possible, be fed moderately with corn, for it is too heating and fattening, and compelled to forage for a part of their living. It will do them good to glean the wheat fields, and scour the hay fields for insects. Exercise is as wholesome in summer as in winter. Care should always be taken, however, to have some shelter from the sun provided, and also to have a bountiful supply of cool, clear water within their reach. Beware at this season of forcing fowls that are to be retained as breeders with pepper and other spices, or with egg foods and such like; you may get an extra dozen of eggs and keep the combs looking bright for a month longer, but the reaction will come, you may depend upon it, and you will have to nurse your fowls all through their moulting time. Medicine is good *as medicine*, but as food it is hurtful, and sooner or later the bad results will follow. All the stimulants breeding fowls need are wholesome food and drink. All the tonic they need during the hot weather is a little iron, which may be supplied by giving them water in rusty iron vessels.

The young stock should be fed generously now and all the time. One meal a day of soft food is enough for chicks two months old and upward; the rest of the time they will do very well with cracked corn. Whole wheat and potatoes or any sort of vegetables boiled are good for variety ; wheat bran and corn meal, one part of the former to two of the latter, make a very good mixture for growing chicks ; if the object is to fatten them, a smaller proportion of bran should be allowed.

The little chicks—those just out—should have a good part of their food cooked ; it will not sour so soon ; is better for them every way. To make a dish fit to set before the king's chickens, beat up eggs in milk, cook, and thicken with corn meal. This will make them grow like weeds after a shower. About this time look out for lice, especially on the young chicks. Keep the coops clean, well whitewashed and ventilated. At night put a little kerosene oil on the heads of the chicks, and also on the mother of the brood. It is unprofitable business to feed lousy chickens.—[Poultry Monthly.

The Apiary.

Mr. McAllen, of Goderich, in his examination before the Agricultural Commission, said bee-keeping is carried on to a considerable extent by amateurs, some having as many as 60 to 100 hives. A large area of white clover makes our district fairly adapted for the pursuit of bee-farming. The following are the best flowers, plants and trees, yielding bee-food, in order of merit:—White clover, bass-wood, fruit and locust trees, buckwheat, golden rod, thistles and garden plants. Red clover is worked upon by Italian bees. The Italians are the main stock in the district. Italian bees work faster; and upon flowers that Black bees pass by, they collect largely from second crop red clover and many sources that the other bees do not. They are also more gentle to handle, cast better swarms and are more prolific than other bees. A good stock of bees will cast one swarm and average forty pounds of honey in a season. The quality of honey produced is good. The bees are supplied with artificial comb. The hive adopted in preference to any other is the Fisher, which is ample protection in the winter. White clover honey sells best in foreign markets.

Some correspondence unavoidably laid over until next issue.

The bug sent us by "Subscriber" is the *Nerara hilaris*, and is generally found among berry bushes, especially the red varieties.

The mowing machine ought not to be gauged to cut low. If grass is cut too close the succeeding crop is much injured, especially if the summer is a dry one.

A correspondent of the English Garden traps field mice by placing bits of cheese in bottles sunk in the soil, rather on the slant, the mouth on the level of the ground.

The smilax vine will lie down in the spring. When the vine begins to die set the pot back on the stand; water occasionally in August or September. It will start out new growth; then repot, it will be ready to adorn your room all winter.

Verbenas for Winter.—By striking young verbena plants in the last days of July, and potting hem first into thumb pots and then into larger when the roots have reached the sides, and keeping them in vigorous growth, pinching back the leading shoots and nipping off every flower head, the verbenas may be made to bloom in the windows all winter. There is danger from over-watering.

A ton of wheat when carefully burned leaves 28.24 pounds of ash, while a ton of straw will leave 60.13 pounds, and a ton of chaff 179.07 pounds. To know this is of interest to the wheat grower, as it teaches the importance of returning the straw to the soil, and great care ought to be taken of the chaff, for one pound as a fertilizer is as much as three pounds of straw, containing six times as much mineral manure as the grain itself.

A Western fruit grower says that he cut off a limb an inch in diameter from an apple tree in each month of the year. At the end of five years, when they were all healed over, they were opened and those found to have decayed the least were those cut in February and eMarh, or just before the swelling of the buds, while those cut in June and July, or during the growing season, had decayed the most; by this it would appear that the old way of pruning in early spring, before the sap begins to flow, was the best.

Ensilage of Green Fodder.—There is a good deal said about ensilage of maize just now that is calculated to mislead. It is simply a process of preserving corn-stalks or other green forage in a green state and in a sour condition, just as cabbage is preserved in sour-krout, only the acid is not developed so abundantly, and some alcohol exists. The corn-stalks are cut into chaff, and packed down tightly in pits dug in the ground, the fodder being covered first with straw and then with earth or planks, so as to keep it from contact with air; the more complete the absence of air the better the fodder is preserved. There is no necessity for any costly building, only the sides of the pit must be kept from falling in. Nothing is added to the value of the fodder by the process, but the fodder is perhaps made more digestible and palatable than dry fodder.

The Family Circle.

"Home, Sweet Home."

TALES OF THE OPERAS.

LOISA MILLAR.

CHAPTER I.

RIVALS.

The scene is one of the fir-clad heights so common in the Rhine valley, where, while the later age village nestles under the hills and trees, and well away from the winds, the old feudal castle stands on the highest hill, and frowns on the humble villagers.

It is just sunrise about the middle of the last century, and the village is already astir, and gay with some festive operations.

These villagers all carry flowers, and they hasten to one point, which is rather more important than the small, flower-covered house of a peasant farmer named Millar—a name as common in Germany as in England.

In a word, and to make no mystery where not any can be required, the villagers are 'up betimes to oblige Loisa Millar with a draw-song and a shower of flowers before they go to their daily work; for it is her birthday, and she is a great favorite with the villagers.

The dancing is scarcely finished when the house-door opens, and Loisa trips out smilingly, and begins wishing good day to them.

As they crowd about her, an elderly but noble-looking man approaches the group.

"Good morning, daughter, on your birthday," he says. "May every similar day bring you greater joy!"

The singers—and, indeed, all German peasants are fair singers—at once turned and greeted the new comer, who, it need not be said, was the father of the young girl, about whom all the peasants' attentions were centred.

He had been up before dawn, and had already effected certain successful business.

"A thousand thanks, friends," he continued, to the peasants, "for so kindly remembering my dear daughter. Forgive a poor father if he is a little proud of his one girl, who makes him as happy a man as there is in the village."

Nevertheless, as he spoke, his face was troubled, as narrowly he watched his only child.

He knew of whom she was thinking, and he whispered to her, "Daughter, your heart is troubled with this newly-found love. I know you are generous and confiding, but endeavour to be mistress of your emotions. I trust that you may never repent having given your affections to Karl."

"I am not afraid, dear father; I am sure he is a noble and faithful man. He is as honest even as yourself, and I am confident his love for me is as fervent as mine for him."

Here the hurried conversation between the father and daughter was terminated by the villagers trooping about her, and offering her their flowers.

She smiled, and eagerly thanked them; but, nevertheless, there was an eager, searching look upon her face, which was lost upon the watchful father.

Suddenly he saw her countenance change, and, in a moment, become brilliant and ineffably happy.

He turned and looked in the direction towards which her brightened eyes were fixed, and, as he expected, he saw the youth of whom he had spoken—a handsome and distinguished person, but whose finely-cut features betokened, equally, gentleness and weakness of character.

He was in the dress of an ordinary sportsman, one which would not attract attention, nor create distrust.

He also held a bouquet, and he pressed forward with the rest to present it.

The farmer's brow clouded.

"Dear father," said the girl, "here is the Herr Karl. Take his hand, for he loves you as though he were indeed your son!"

But the world-wise old farmer pretended not to hear his daughter's request, and turned to one or two of the peasants, and began talking village gossip.

"I am happy now!" whispered Loisa in the sportsman's ear.

"Think you I was happy until near you?" he whispered, in low, burning accents.

It was here that the church bell made itself heard, calling to the early and brief morning prayer.

The simple-hearted people turned towards the sound, and in a few moments the space before Millar's house was clear but for the farmer himself, who was in no mood for praying, and who remained near his house, musing deeply

It was only when the new-comer, a morose, determined-looking man, who was dressed like one of the superior or noble class, struck the farmer roughly on the arm, that the latter became aware of his presence.

"Millar!"

"Messire Wirm!" replied the astonished farmer.

"It would seem you have dared to deceive me! Do you think such a man as I am will bear the torture of jealousy with impunity? A few words of plain speaking, farmer. You know how I have loved your daughter; how, not one year since, I humbly, even abjectly, asked her to be my wife! You gave your sanction, and bade me speed well with my wooing. A year has passed away, fortune has befriended me; and yet, when I came to you seven days since, and renewed my suit, you looked coldly upon, and turned your face from me!"

"I gave no sanction to your marriage with my daughter, Messire Wirm! I did but say that if she loved you, and would marry you, I was not the man to say her nay!"

"What!" cried the other. "Have you not, as the maid's father, the power to compel her to hear me?"

"Nay, for my part, I hold that her choice shall be free. No stern command of mine shall trouble her young heart—for I seek to be her friend as well as father."

"Old man," says the visitor, "you are blind even in the blaze of noon. Has it never seemed to you that a father may pay too dearly even for the confidence he puts in a daughter. She is in danger even as you speak."

"Loisa in danger! What say you?"

"He is not what he seems to be. He has deceived, her hitherto, but his deception is not ended. Bad has been the beginning—but worse remains to come."

"Messire Wirm, what meaning is hidden in your words?"

"Oh, I know why my suit is met so coldly, now—another has supplanted me! A little time, and she will be glad of that love of mine she now despises."

"Speak more plainly, man!"

"Plainly, then, her lover is no common creature like herself, but the only son and heir of the Graf, up yonder, at the castle; he who has but recently come home from Heidelberg—doubtless, with college morals for his guide."

"My lord's son!" cried the old soldier, in a despairing voice.

"The very same," said the other; "and with that knowledge wringing your heart for the time being, I take my leave, good Farmer Millar."

For a few moments, the old man remained stupefied—overwhelmed. But soon the soldier mastered the man, and he clenched his hands.

There was danger, even death in his face, as he turned and entered his humble home—that home in which he feared the tempter had already found an abiding place.

CHAPTER II.

PEERS.

It was while Millar was seated in his cottage home, working out some course of action, that the person named Wirm, reaching the castle on the hill-top, obtained an interview with his lord known in the province as Count Walter, with whom he was closeted for some time.

"What do you tell me?" asked the nobleman, a white-haired man, whose features betrayed cruelty and determination, overshadowed by what might be the result of either physical pain or terrible remorse. "My only son in love with a common villager?"

"My lord, it is terrible reality, and much I fear he contemplates a marriage with her."

"Marriage with a peasant!"

The nobleman remained engrossed in his own thoughts for some minutes, then, suddenly looking up, he said. "Hasten to meet the Duchess, who must be approaching the castle, and assure her that, notwithstanding all she may have feared and may hear to the contrary, my son loves her dearly and that she only shall become his wife. Quick, good secretary, quick!"

Left alone, the Count's face betrayed the workings of a weary and weighted conscience. Let us follow his thoughts.

His reverie was only broken by the entry of the young lord who is already known to the reader as Karl, but whose actual name was Rodolf.

"Good morn, dear father," he said, brightly.

"Give me your hand, my son. You come to me in fit time to hear the happy news I have for you. Your cousin—my dead brother's only child, our Frederica—is generous enough to forget, the memory of the old Duke, her few weeks' husband and is willing to unite her father's house and mine by wedding you. Is not this rare news on this bright and happy day?"

"Marry my cousin!" he cried.

"What better fate can you desire. She is younger than thyself, beautiful, and rich; and better still, she loves you dearly, and a great future lies before you!"

"I have no care for grandeur," said Rodolf; "and ambition never made my heart beat more quickly even for a moment."

The old lord struck his son lightly on the arm.

"A truce to bush-beating! I know your secret!"

The youth turned quickly.

"Then I have no need to tell it you, my lord! Believe me when I say——"

"Be silent, son! I heard footsteps! They are those of the Duchess, who has just arrived at the castle!"

"My lord!"

"Go meet her, and forget not she is worth your worthiest smiles! Win her, and wed her! She is worth the wearing!"

The poor youth was almost incapable of movement; and, so far from hurrying forward to meet the Duchess, he fell back a pace, as the doors of the great chamber were thrown open, and a woman of superlative beauty, and magnificently dressed, crossed the threshold.

She greeted the father and son with the most delightful frankness, but it was evident that she perceived their was some restraint between them.

Very few words had passed between the relatives, when the Count prayed his niece's pardon, as his affairs compelled him to quit her company; and turning to his son, at whom he looked with cruel meaning, he bade him entertain his cousin.

The young nobleman, who completely understood his father's glance, took the instant determination to throw himself upon his cousin's mercy; and to that end, no sooner were they left alone, than he said, "Duchess——"

Here he stopped by a gesture of her hand.

"I pray you do not call me Duchess! Remember that we are cousins, and that my name is Frederica. An early marriage and an early widowhood may have changed my fortune, but in all else I am still your loving cousin Frederica."

He flung himself suddenly at her feet, and was about to confide his secret, when her voice again arrested him.

"Why do you kneel to me? Why are you of so sad a countenance?"

"I cannot deceive you, my cousin! My father would have me to commit upon you the fraud of allowing you to suppose that I love you!"

"Ah!"

"I have never aspired to possess a wife of your rank, Frederica. Indeed, my affections are another's!"

"Another's!" she cried, in tones of evident anguish.

"Pity and forgive me!" he said. "I would not outrage you by the offer of a heart which could never be yours! I would rather die than be guilty of such falsity! But your face changes color!"

"My cousin," said the Duchess, speaking in a cold and proud voice, "if it pleased you to kill me, I could forgive you, if only a moment's length was mine between the blow and death; but I do not forgive a slighted affection! What! I come to you, with rank and fortune, and you pass me for another—for one, too, who I may assume is far my inferior in both station and fortune! I will hear no more! I command you to be silent! But, be assured that, if I can love deeply, I can hate terribly; and I warn you that, against you and you common love, I, Duchess Frederica, dec are undying war!"

She turned, and walked proudly from the room, taking no heed of the entreaties the gentle but weak Rodolf addressed to her.

CHAPTER III.

THE WHISPERED SECRET.

We are once more in the cottage home of Millar, the soldier-farmer.

The honest fellow was not under his roof, but the house was not deserted, for Loisa was at the window overlooking the glade, and gazing anxiously on the landscape.

The horns and cries of hunters now and again were heard coming from a distance, but it was clear that the desire to see the hunt had no part in the young girl's act of gazing from the window. Her face looked worn; the eyes sad and anxious.

"He is not coming!" she thinks; "and yet he promised to quit the hunt and join me here!"

Suddenly a footstep sounded near the door, which was almost immediately opened. She knew the difference, and had no need of eyesight to be assured that it was her father, and not her lover, who was about to enter.

The farmer threw himself despondingly upon a chair.

"Dear father," she said, softly, as she approached him, "what ails you?"

"It is as I feared, my girl; you are betrayed! False in name and word, right sure am I that he must be false in will and wish!"

"He—Karl? Oh, it is impossible!"

"He is the only son of the Count, our lord and master; and already the news spreads over the village that this so-called Karl—in truth, my Lord Rodolf—is to marry his cousin, the young widow and Duchess Frederica!"

He did not see the aweful change upon her face.

He began angrily pacing up and down the room, his eyes seeking the ground, his hands clenched.

It was here the door was again opened, and the cause of all this grief crossed the threshold.

The old man raised his horny, clenched right hand, and strode hurriedly towards the intruder.

"Ah!" cried Rodolf, at once comprehending what had happened. "You have learnt who I am, and you both think I am a traitor to you. Oh, you are mistaken! My name may be different, but my love can never, never change! Loisa, give me your hand."

And causing the willing girl to kneel with him before her father, "Good Millar," he said, "I promise by all that is great and good, by high Heaven itself, that only your daughter shall be my wife, let happen what will!"

"A truce to barren words!" said the wiser old peasant. "You well know, my lord, that your father would never accept my daughter as your wife, and that he has almost absolute power, not only over us, but over you."

"You are in error, Millar. I am in possession of a secret, which puts my father completely in my power. It is a power which I never hoped to use; but if he compels me to use it to save your daughter and myself from life-long misery, I shall have no hesitation in crushing him."

As though in answer to the threat, the door was unceremoniously thrown open, and the weary-looking but implacable Count entered the room.

"You here, my lord!" cried his son.

"Well may you tremble, my son, with the consciousness of your intended wickedness! I am come to save this girl from a cruel and monstrous plot to ruin her!"

The peasant and his daughter started; but they were soon reassured by Rodolf's words.

"My lord," he cried, "you are mistaken. I love the peasants daughter, and I am determined that no other woman shall be my wife."

The nobleman laughed scornfully, and said, lightly, "She has trapped you very cleverly."

For a moment the young lord drew his sword; then his indecision of character mastered him, his hand fell to his side, and he remained speechless.

Not so the peasant.

"My lord," he said, going up to Count Walter, "do you forget that I am an old soldier, and that you accuse me and mine of infamous conduct, of which there is not the slightest proof?"

"Do you dare threaten me, hind?"

"A man can dare all when his innocent daughter is accused of gross conspiracy!"

The nobleman looked calmly at the peasant, turned to the door, and gave a command.

The next moment a *posse* of soldiers entered, who, apparently, knew the work they had to do, for, at once, they seized the old man, who, in spite of his strength, was soon overpowered.

"Arrest the girl also!" cried the Count.

It was then that the weak-purposed lover showed himself a man of some action; and drawing his sword, he cried, "I shall kill the first man that touches her?"

"What!" asked the Count; "will you dare to turn your sword upon me?"

And thereupon he seized the weeping, trembling girl, and threw her roughly amongst the hesitating soldiers.

The wretched son let fall the point of his weapon. He had neither courage sufficient to actively resist his father's will, nor moral courage to crush the tyrant by whispering his knowledge of the secret which he hoped would silence a guilty father.

Then another exit from his difficulties presented itself to his mind. He ran forward, pointing his sword at the fair girl, intending to kill her first and himself afterwards.

But the impulse passed away in a moment.

"Why do you hesitate?" asked the mocking Count. "Twould end the difficulty!"

He almost leapt at his father, and whispered in his ear, "Twould not shock you to see her die—you, who are a lord by reason that you killed your elder brother?"

As he spoke—as he saw the extreme of despair on his wretched father's face, all his weak indecision returned upon him, and, with a terrible cry, he fled from them all.

The wretched man, fearing he knew not what, cried, "Come back—come back, my son!"

The amazed soldiers looked at their lord, of course quite ignorant of what had passed between the father and son, and were at a loss to know what to do with their prisoners, when the Count cried, "Release them—they are free!"

* * * * * *

It is the evening of the day upon which the old Count learnt that his son knew his awful secret. Already the inherent bad nature of the Count had re-asserted itself. With such a man, an impulse of agony like that produced by the sudden discovery that his son knew the secret of his crime would soon

be chilled by the conviction that the knowledge of the secret could not be swept away, and the hope that for his own sake the son would not divulge the father's crime.

Such a man as the Count Walter can only argue from the shallowest and basest selfishness.

A few hours, and the knowledge that his son had carried out no course of action, were sufficient to prompt the heartless old man to recommence the plans which his son's resistance had temporarily shattered.

The Duchess, on the other hand, still desperately devoted to Rodolf, was quite willing to forget his presumed love for a villager, and accept him as her husband.

The Count's persecution was soon evident,

The unhappy girl was busying herself about her domestic duties sadly enough when the villagers hurried to her, saying that the Count's soldiers had seized her father and had taken him to the castle.

The news was confirmed by the arrival of Messire Wirm, the Count's evil-eyed secretary, who, dismissing the villagers, told her, when alone with her, that there was but one way of securing the release of her father. That was by writing a letter to himself, declaring she never loved Rodolf, but that he (Wirm) was the first. and only object of her affection, and promising to leave the place with him if he would meet her at night.

Wirm drew up the recantation, which, after some demur, Loisa signed, and then, at his request, accompanied him to the castle to confirm its contents, and secure the freedom of her parent.

And, while she appeased the jealous anger of the Duchess by meekly declaring that she had never truly loved this young lord, and that the secretary, Wirm, had always held her affections, the letter she had written was placed before Rodolf's eyes, that it might exite in him hatred and contempt of the poor girl whom he had hitherto believed loved him heart and soul.

He was walking apart in a garden attached to a wing of the castle, to which he had been confined since the defiance he had launched at his father on the day when Millar and his daughter had been arrested.

A pretended peasant approached him—but who was really Messire Wirm—and, at the same moment, held out the letter that the hapless girl had written.

He seized the missive as he recognized the handwriting, and, in a few moments, made himself master of the contents.

For a time he was incapable of any action whatever, but his first act when he could collect his thoughts was to send for the secretary and demand an explanation.

The miserable man played his part well. He affected compassion admirably, but was overcome with trepidation when the youth madly commanded him to take one of a couple of pistols, for the purpose of fighting a duel. His cunning, however, did not forsake him, and rapidly devising a scheme for his own safety, he suddenly took the pistol and fired it in the air, as though by accident.

He knew the young nobleman was too loyal to fire at him while practically disarmed.

It followed as he had anticipated. The retainers began crowding into the garden and around the young lord, until they fell aside at the approach of the old lord,

Oh, he played his part well!

He took the letter which his son held toward him, and read it with every expression of surprise and disgust.

"My son" he said, "these common creatures have no hearts. Forget her; be too proud to be cast down by a heartless peasant girl and turn to your radiant cousin, your equal in life, who is still desirous of bestowing herself and her fortune upon you.'

He counted upon pride and time, his own fraud, and his son's self-respect, to consummate his plans.

He had no knowledge of the despair of love.

CHAPTER IV.

VICTIMS.

Let us now go to the desolate cottage occupied by the soldier-farmer Millar and his daughter Loisa.

It was night-time, and the persecuted girl was seated at a table eagerly writing. Two or three of her village friends were standing close together, and whispered as they watched her.

One of them, Lette, at last came near her, and said, "Loisa, you have neither eaten nor drank to-day. For our sakes, if not for your own, take some food."

"No," she said, simply; "I am not hungry."

Then, after a pause, she said, with equal simplicity, "Why is the church lit up?"

The girls looked confusedly at each other, and at last, one more adroit than the rest, said, "'Tis the night of the blessing upon the Count, it being the anniversary of the day when he gained the title."

They did not dare say that the preparations at the church were for the midnight marriage of the young lord with his cousin, the youthful widowed Duchess.

The old lord had calculated upon the forec of Loisa's letter to bring about this marriage, caring little what after-explanations came to pass, if once his strange scheme for repairing his crime were completed; and he had given orders for those preparations at the church which had attracted her attention, overwhelmed as she was with grief.

She had fallen into a deep fit of musing, when heavy footsteps were heard, and the door opening, the old peasant entered.

She had gained his liberty, although at a great price; and, with a cry of mutual love, the father and daughter clung desperately to each other in their grief and desolation.

"Let us leave them together," said the sharpest-witted of the peasant girls; and they crept out softly, leaving the father and daughter alone with their grief.

"How pale and cold you are!" he said, anxiously.

"Oh, I am happy now!" she said, simply.

"I know all," he said; "the secretary has been strangely frank with me.'

"Ah, dear father, you know it all?"

"Such love as yours renounced for my sake!"

"On earth only," she whispered.

The father looked earnestly at the daughter as she turned from him and neared the table.

"I like her not to be so calm, "he thought; "it is unnatural. I would rather that she wept. Why, daughter, what letter have you there, which you have taken from the table?"

"Promise me to send the letter as I have written it—and to *him*."

He opened the letter without hesitation; it read as follows:—

MY DEAR RODOLF.—

"By treason we have been divided, and by death only can we be re-united. When, therefore, at midnight, you hear the passing-bell tolled for a dying sinner, come—come, that I may see you once before the grave claims me."

For a little time he cannot speak, but gradually gaining strength, he takes her hands and whispers, "If you cannot live for yourself, can you leave my furrowed cheeks and gray hairs alone, all alone in this weary world? My daughter, my only child, have pity on yourself, by taking pity upon me."

The appeal to pity for him (for she was past all pity for herself) prevailed, and she flung the terrible letter from her.

"We will live for each other, dear father," she says. "Forgive my wickedness It was that, and not myself, prompted me to seek welcome in death."

The old man was very weary, and in a little time she easily persuaded him to go to his room and rest.

She had not deceived him. She intended to live; but, being alone, she sought that consolation—the perfect solace equally of the richest and the poorest, the most happy and the most wretched—prayer.

She did not hear the door open, nor her lover say to a servitor who accompanied him, "Go tell my father I will await him here."

When the servant had gone upon his errand he stepped softly across the threshold. He started as he saw her, but immediately regained his deadly calmness, and in a low, bitter voice he said, "She can pray—even she!"

He neared the table, saw a glass upon it, and thereupon, with spasmodic movements, he took a small phial from near his heart, and, unstopping it, poured the contents into the receptacle.

Then he moved towards her.

Both were too desperate to show much action.

As she turned, hearing a footstep, she merely started. Then her head dropped, she standing guiltily, as he thought, before her lover.

Without a word, he opened the letter she had written by Wirm's dictation, and held it before her eyes. All he said was this:—

"Did you write this?'

"Yes," she said, meekly.

He staggered to a chair.

"I am sick!" he said; "give me some water. There is a glass upon the table—fill it."

She obeyed him meekly, and brought him the filled glass.

"Will you drink with me?" he asks.

"Yes," she says humbly, "if you tell me."

She swallows half the contents, and obediently offers him the remainder.

"It is our last draught!" he says, and empties the glass. "You never loved me!" he said. "You deceived me, laughed at me, and preferred the meanest of mankind! Ah! for me, too, another is waiting—and even now at the altar! Do you not hear the voices of the choir? Turn, and you will see the brightened church gleaming in the dark night!"

"You—you, Rodolf!" she says innocently,—"can you love another?"

"Oh, she waits—and waits forever!" he said, rising, walking up and down wildly, unbuckling his sword, and flinging it on the table.

"Farewell good sword!" he cries, "I shall never touch thee more!" His voice grew wilder as he continued "Turn your eyes away from me—for though in look an angel, in truth I am a demon!"

"If I dared speak!" she thinks,—if I only dared to speak!"

"Do not mock my grief," he says, weakly, "for my heart is broken!"

"Shall I pray for you?" she asks, in simple, self-sacrificing faith.

"Your prayers," he says, indignantly, "are of no avail! Do you love the secretary?"

"Forget me!" she cries.

"Do you love him?—and answer me truly, if you would not die with a falsehood on your lips, for from that glass you and I drank our death together!"

Her despair is superior to her natural terror of death.

"The grave releases me from my oath!" she cries. "Rodolf, I never loved but you. I wrote the letter you have shown me to save my imprisoned father's death. I love you—I love you!"

"And I have slain you!" he cries. "Oh, forgive—forgive!"

They are past human help and all human passions as they reel into each other's arms.

The farmer, hearing the wretched lovers' cries, wakes from his feverish sleep to hear the young lord whisper, "I have killed her, martyr that she is! Take my unworthy life before her own has fled!"

"Rodolf!" she says, faintly, for the poison is working its will rapidly upon her gentle frame.

Then she hears her father's pleading voice, and lowly she whispers the word, "Pardon!"

But neither lover nor father can save her, and as they watch, she dies.

He waits, thinking no more of active, breathing life, when he hears his father's voice upon the threshold of that shattered house.

He turns and sees the secretary standing near his more wicked master.

There is strength left in him for vengeance. He rises from her dead form, he seized his sword once more, and, moving to the false secretary, who is too paralyzed with fear to save himself, he runs him through, and sees him fall back dead.

Then he turns to his father.

"The day of repentance for thy wickedness has come. Where now is thy ambition?"

And turning to Loisa, he falls dead by her side, leaving the merciless father alone in the world, exactly, as by the latter's act, the soldier-peasant is left solitary.

His crimes have come home to him.

J. R. W.

An ambitious young lady was talking very loud and fast about her favorite authors, when a literary chap asked her if she liked Lamb. With a look of ineffable disgust, she answered that she cared very little about what she ate compared with knowledge.

"When I goes a shopping," said an old lady, "I allers ask for what I wants, and if they have it, and it is suitable, and I feel inclined to buy it, and it is cheap, and can't be got for less, I most allers take it, without clappering all day about it, as some people do."

Health Amusements for Children.

Both parents and children of the present day are to be congratulated at the large provision made for recreation and exercise. Yet we need to be constantly on our guard, lest artificial methods and indoor amusements still too largely replace those natural methods of exercise to which all healthy children are inclined. It has been part of our pleasure in life to study children in those instincts or tendencies which they share in common with the animal kingdom. The motions of an infant and the movements of the walking child are as natural in their plays as they are in other movements. Running and jumping come just as naturally to a boy or girl as they do to lambs or kittens. Noise is not only an expression of intellect, but of physical activity.

We have had occasion often to compare family groups in one of which the play and exercise is natural and in the other more artificial. These latter are often needed substitutes or aids; but, after all, the natural methods are to be kept in view. It is, for instance, far more advisable, when practicable, that a child that walks should exercise a good part of its time on its feet, rather than be drawn about in a baby carriage. Old men and tired women may very well take their airing in a coach; but the child is far better off if its main dependence is movement by means of limbs.

In the single respect of giving fresh air, the riding about of a child is very good, or as an addition to active exercise, in that it affords rest out-of-doors; but we see too many children who are trained in inactive, listless life by being carted in a vehicle. It would be far better for the most of them if, so soon as big enough, they were taught to pull their own carriages, the seat being occupied by a good-sized, well-dressed doll.

The ball as a plaything is very valuable, because it is the same exercise for the arms that walking or jumping or running is for the legs. Together these exercise the body. The title of a boy or girl to two or three balls, of different degrees of hardness and elasticity, is, I think, the first title they by right acquire in personal property.

A wheelbarrow or a wagon comes next in order. It is beautiful to see how in the house a child will keep busy with these, in moving other playthings from place to place. If, out-of-doors, a litte spade is added, it takes but a very small plot to give amusement to a child, without great damage to the lawn. The various blocks and toys now furnished to children are not merely a kindergarten method of teaching, but in their use and arrangement there is often physical, as well as mental exercise. It is so much better than the teaching of books, just because it is constructive, and in the construction the whole nature is exercised. Much skill can be shown by parents in providing these things; not in a haphazard way, but with a direct view to physical, as well as to mental dovelopment.

Light gymnastics have come to occupy an important place, both in exercise and instruction. Having recently had occasion to review an excellent text-book "Light Gymnastics," we were greatly interested in seeing how valuably exercise, precision, art and music could thus be combined to advantage. Most of our schools would be benefited if such a five-minutes' exercise could be had after each hour of sitting or study. All children become interested in these, when they are not made too complex, and thus real vigor is imparted. The only danger is in using them so far as substitutes for out-door exercise as to deprive the children of exercise in the open air.

One of the great advantages of exercise is that it causes deeper and greater inhalation of air, which is thus a vitalizer and a real food. As out-door air is purest, we must not introduce exercise and amusement indoors such as will lead to too much house-life for children. Parents cannot be too much impressed with how much the success of their children and their common comfort depends upon this kind of training and development, and how much the health of the child is within the range of available means for its securement. Indeed, we are often annoyed that, by overfeed and little exercise, plump children are so often weak, while the active and lean are so wiry and enduring,

Swimming and skating are modes of valuable exercise, and only need the safeguards of caution and of indulgence in moderation. As a winter sport, the use of the sled and the skate are to be encouraged for girls, not less than for boys.

Uncle Tom's Department.

MY DEAR NEPHEWS AND NIECES,—Some of my nephews have been inquiring about rabbit keeping. Knowing the subject will interest many, we will endeavor to give you a short description about it. A rabbit house is very simple in its arrangement. The floors are of cement, grooved with gutters, otherwise of very hard wood, having holes bored through at the back, and the hutch slightly tilted, so as to allow the moisture to escape. The doors open very wide (in fact have the whole front of the hutch filled in with wire netting) to enable boxes of various sizes to be placed inside as seats, sofas and beds. The hutches are well raised from the floor. They should be thoroughly cleaned out at least once a day, by the means of a small hoe with a long handle (as the doe with young one is sometimes surly, and quite apt to bite or scratch the hand), and then sprinkle dry earth, sand or ashes on the floor. The furniture required for a hut is a trough for the bran or other dry food and a pan for water, having them both fastened so that the rabbits cannot upset them. They should have hay or straw for bedding. One important point in rabbit keeping is regularity of meals, which should be composed of various articles, and in small quantities. They should be fed on bran, oats, (corn in small quantities), potatoes, cabbage, dandelions, clover, turnips, parsnips, apples, or apple peelings, carrots, parsley, lettuce, etc., and soaked bread and milk occasionally. It is a good thing to place in the hutch a strong piece of stick for them to gnaw. Rabbits are very excitable animals, and require to be treated with tenderness. Strangers should not be allowed to handle them. They are very fond of being caressed, and are very cleanly in their habits. Will often sit out in the rain when they have cover close at hand, apparently liking the moisture on their coats, when they begin brushing and washing themselves busily. Our advice to all who are about to undertake the care of rabbits, is to count the cost beforehand, and if they are not prepared to give them proper attention, abandon the idea altogether.

UNCLE TOM.

PUZZLES.

67—RIDDLES.

All alone by the sea,
Seldom any visits me;
Yet thousands see me every year,
And many an anxious heart I cheer.

A gentleman being asked by a lady how old he was, answered: "Madam, what you do in a great many things."

How many times will a black squirrel have to go to a corn crib that has one hundred ears of corn in it, and take three ears with him each time.

I am composed of 5 letters;
My third is one-tenth of the fifth;
My fifth is one-half of the first;
My second and fourth stand for yourself;
The whole is what I hope you all are. J. A. C.

68—A QUESTION.

A man travelling entered a hotel, and said to the landlord, "If you will give me as much money as I have I'll spend 10 cents." He did so, and he went his way and came to a third, and said unto him likewise and spent 10 cents, and he had no more left. How much had he when he started?

LALLA.

69—REBUS.

Intact is my foremost part,
That everybody knows full well;
My second is an auction mart,
And now my whole I'll brightly tell:
Of letters nine I am composed,
And if the truth you'd have me say,
I am a word that is opposed
To trade that's in a petty way.
My 1, 2, 7, 8 and 5,
Will name the largest thing alive;
My 2 and 7 and my 4 and 9,
Will clearly health and strength define;
My 3 and 1, likewise my 8,
A bird of night will designate;
My 1 and 9, my 7 and 4,
The rich enjoy, but not the poor. L. L. N.

70—DECAPITATIONS.

Whole, I am a part of a stove. Curtail, and I am the seat of life. Curtail again, and I signify to listen. Now behead, and I become a part of the head. Restore to my original, and I am a planet. J. M. J.

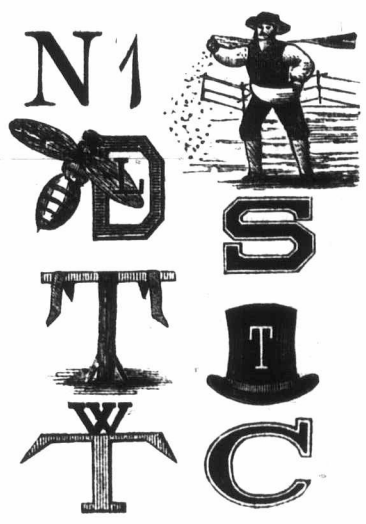
71—CHARADE.

My first, though not half a rod in size, is three parts of a pole;
My second over river, pond and brook in winter hath control;
Deprived of my third, this world would soon be desolate and undone;
My whole both day and night you'll see in the streets, or walks, or run.

72—DIAMOND PUZZLES.

My first is a consonant;
My second is vice;
My third is a gay young lady;
My fourth is a kind of school;
My fifth is a rebuke;
My sixth is a man's name;
My seventh signifies to go with;
My eighth means betwixt;
My ninth is to reform;
My tenth is cunning;
My eleventh is a consonant;
My whole is a person's name, and well known to all readers of the ADVOCATE.

73—ILLUSTRATED REBUS.



74—DECAPITATIONS.

Whole, I am pure. Behead me and I denote envy. Behead me again and transpose me, and I become an accommodation. Whole, I am a kind of grain. Behead me, and I signify warmth. Behead me again, and I am a verb. Whole, I am to glide. Behead me, and I am a girl's name; again and I devour.

75—PUZZLES.

Is there a word in the English language which contains all the vowels?

Is there another which contains them in regular succession?

JOSIE AND LIZA.

One-third of a pea;
One-fifth of an apple;
One-sixth of a cherry;
One-fifth of an onion;
One-eighth of a cucumber;
One-sixth of an orange;
One-sixth of a potato, equal what fruit?

JAMES DICKEY.

Answers to July Puzzles.

59—

Wrist	Bleat	Snare	Damas
Rover	Ladle	Naval	Alert
Ivory	Edwin	Avoid	Melee
Serfs	Alive	Raise	Arena
Trust	Janet	Elder	Steam

60—

```
        B
      R A T
    J O L L Y
  R A I L W A Y
    F L O A T
      T O P
        N
```

61—Let A B and C be put for three men, and a b c for their wives respectively. Then Aa, Bb, Cc are all on this side.

Parties on this side Jordan.		Beyond Jordan.
Bb, Cc	1 Aa crosses	Aa
A, Bb, Cc	2 A returns	a
A, B, C	3 b c cross	a, b, c
Aa, B, C	4 A re-crosses	b, c
Aa	5 B C cross	Bb, Cc
Aa, Bb	6 Bb re-cross	Cc
a, b	7 A B cross	A, B, Cc
a, b, c	8 c re-crosses	A, B, C
a	9 b c cross	A, Bb, Cc
Aa	10 A re-crosses	Bb, Cc
	11 Aa cross	Aa, Bb, Cc

62—Ebbe, Rhone, Shannon, Nile, Ease, Mersey, Trent, Tyne, Thames, Severn, Volga, Lena.

63—Uncle Tom's Department.

64—Foxtail, Oxtail, Ail, Ale, la, a.

65—All the world's a stage, and all men and women merely players.

66—Halifax.

Names of Those Who Sent Correct Answers to July Puzzles.

Josie and Eliza Clarkson, Clara Allan, Jas Cousins, Alice Fortenar, Emma Phillips, T J Emery, John Dickey, Stel a Day, Margaret Shier, Geo Thompson, Simon Kerr, J Warren, Lucy Taylor, Colin Blake, Eliza Routledge, Mary Johnston, Eliza Yates, Geo Harris, Willie Ellis, Jessie Currie, Emma Hall, Geo Jenkins, Minnie Gorman, S J McKay, Walter Moore, Henry Kennedy, P F McFarlane, John Coote, Philip Worthington, Minnie Scarnell.

HUMOROUS.

"Did you know," said a cunning Yankee to a Jew, "that they hang Jews and donkeys together in Poland?" "Indeed! then it is well that you and I are not there," retorted the Jew.

Two boarding-house keepers are comparing notes. "It 'pears to me, Mrs. Miggles, that your chicken salad is never found out—leastways, I never hears none of the boarders complain." "Well, you see," explained Mrs. Miggles, "I allus chaps up a few feathers with the veal."

"Do you believe in second love, Mr. M'Quade?' "Do I believe in second love! Humph! If a man buys a pound of sugar, isn't it sweet? and when it is gone, don't he want another pound? and isn't that pound sweet too? Troth, Murphy, I believe in second love."

The members of a young lady's debating society in Troy have decided in favor of long courtships. Level-headed girls. Observation has taught them that there is a wonderful falling off of confections, balls, carriage-rides and opera when courtship ends and the stern realities of married life begin.

A young couple just married are passing the honeymoon in a pretty villa. "Tell me, my love," said she, "that you are not tired; I fear sometimes that you regret your bachelor life." "On the contrary, my angel," he replied, "I regret it so little that if you were to die I would marry again right away."

THE EYES.—Many persons are suffering inconvenience, if not pain, from weakness of the eyes. This sometimes proceeds from local inflammation and sometimes from other causes. Persons who have been thus afflicted say that they have derived almost immediate, and in some cases permanent relief from the application of salt water as a bath; and where the pain has been aggravated, from a compress saturated with salt water laid on the eye, and renewed at certain intervals. Opening the eyes and submerging them in clean salt water has been found beneficial to those whose eyesight begins to fail. The solution should not be more than a tablespoonful of salt to a pint of water, and less if the eyes are weak and very sensitive.

We cannot too much direct the attention of parents to the fact that a great part of the early training of children is physical, and that it is to be thought out and arranged with proper adaptation. It is just as important to select plays as it is to choose what shall be the first studies or how they shall be taught. Modern improvements do not all tend to give vigor to the race. The machine that the boy or girl is to operate during life is in process of construction all the way up to full stature. Parents and teachers are the machinists of master builders to a far greater degree than is imagined, as day by day and year by year the construction is going on to completeness or to unalterable incompleteness. [Independent

Minnie May's Department.

My Dear Nieces,—To our city friends we would say that they provide themselves with country friends, hence an agreeable change can be made between each. The country is inhabited by numbers of people full of kindness and hospitality. But let not the emphasis of hospitality lie in bed and board, but in truth, love and courtesy. Kindness and courtesy are better than a rich meal, and of more value than a sumptuous bed chamber. To many the expectation of guests signifies a deal of rich cooking and "getting ready." As to having one's house ready, with rooms nice and pleasant, this is what all should strive to have. But the rich cooking is to me most objectionable. Why not give our guests good bread and sweet butter with some simply prepared fruit, instead of hot biscuits and cakes, pies and tarts of every description. If custom would only sanction such things, how easy our path might be? We are expected to be prepared for the invited guest, but it is when the unexpected visitor appears that many households are set in a flutter of excitement, and great preparations are to be made to get up a rich meal. Better far invite them to partake of a simple meal, and give them the time that would be taken in preparing an elaborate one. The most ageeable hospitality to visitors who become inmates of a family is that which puts them entirely at ease, but this can never be if the guest perceives that the order of family arrangement has been changed, and that time, comfort and convenience are sacrificed for their accommodation. Of course the summer vacation is the time to visit the country, which we hope many of you are now doing; perhaps renewing the acquaintance with familiar trees and well known meadows, in exploring again the remembered river and climbing once more the unforgotten hills. Then there are the animals to see, to receive the grave greeting of the dignified patriarchal spaniel and the flippant puppy, whose objections to any one person or thing being still, is sometimes a nuisance. Then there are the crops to examine, to learn turnips from wheat, and clover from lavender, etc. Keep your eyes open and all your senses alert, and you will find much to see and learn. Minnie May.

Answers to Enquirers.

C. S. R.—"Can any one inform me how to rid my flower garden of ants?"———A simple expedient is to lay fresh bones around their haunts They will leave plants and attack these. When thus accumulated they can be destroyed by dipping the bones in hot water. Cyanide of potassium placed in small lumps at the entrance of the hills, or applied in solution in their holes and on the ground around them, will destroy the ants. As this material is a deadly poison it must be handled with care. Persian insect powder applied to the plants infested, through a little bellows, is also efficacious.

Penelope Prim.—Give your card to the servant who opens the door. He or she will need no instructions further than for you to say, For Mrs. ——— or Miss ———, as the case may be. When leaving put two of your husband's cards on the hall table, one for the lady and the other for the gentleman of the house, but do not put your own card on the table. It would be superfluous.

P. H. C. asks:—What will remove the disagreeable smell arising from boots, shoes, etc., worn during the summer months? A. Try a strong solution of sulphate of iron—copperas—in water.

"Fax" asks:—What will effectually keep off mosquitoes? A. Try an infusion of pennyroyal in water, or an infusion of quassia chips.

B. C. J.—There is an Orphans' Home in this city. For any information required apply to Miss Moore, Secretary of Protestant Orphans' Home, London.

Rustic.—How ought a lady conduct another lady or gentleman to a seat in church? Ans.—If the stranger be a lady the owner of the pew would allow her to enter first and occupy the end seat, which is always considered the place of honor for ladies, but if the stranger be a gentleman the lady walks into the pew, first allowing him to follow and sit next the door, that being the favored seat for gentlemen.

Miss Julia:—When is the best time to gather ferns for the purpose of pressing? Is it necessary to iron the leaves?"———Collect ferns for pressing before their fruit is ripe, otherwise the spores will burst while in process of drying. When practicable carry a good-sized book and as fast as the ferns are gathered place them at once between its leaves. This prevents the ends of the ferns from curling and also saves one handling. Change the ferns to dry places in that or another book after they have been pressed a day or two.

Fig. 1.

S. L. Z. asks:—What starch is used in laundrying new-made shirts, how applied, and how ironed? A. Use corn starch, boil to smooth paste, cool, and starch the goods; dry quickly. Before ironing, dampen down in thin, raw (unboiled) starch water. A little gum arabic or pure white wax is often added to the boiled starch to afford fine gloss. Iron in the usual way, with a common sad iron; then dampen slightly with a clear cloth and the starch (raw) water, and polish briskly with a polishing iron.

The Housewife.

This useful and convenient article is represented both closed and open in figs. 1 and 2. The outside may be of velvet moire of any dark color, or

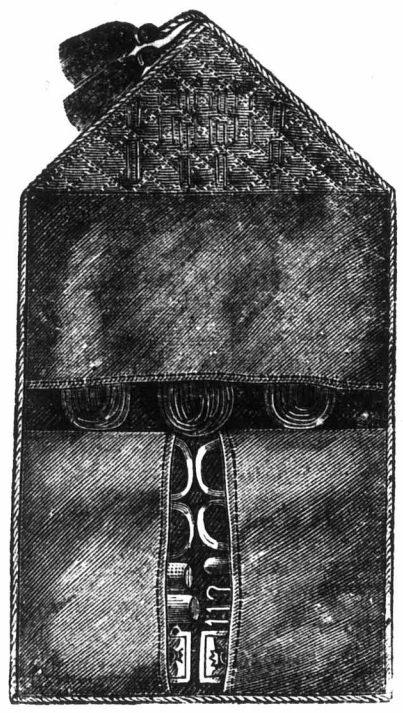


Fig. 2.

Panama canvas may be substituted, worked in Russian embroidery with silks of various colors. The size is 14 inches long, by 5 inches wide. It will be seen by fig. 1 that the end which turns over is sloped to a point, and fastened with a loop over a button, from which hang two tassels of the color of the lining and cord. Fig. 2 shows the arrangement of the inside. The lining is of blue, or any contrasting satin, over an inner silk lining to match; is quilted at the end, and forms three pockets, in two of which various divisions are made for scissors, crochet needles, thimbles, etc. The pocket that occupies the whole width at the end is to hold cases for various numbers of cottons or colors of silk; also papers of needles and cards of buttons. The pointed end would be better with leaves of flannel or merino for loose needles, or otherwise the quilted satin will fray out. The edges are finished with a cord, or, if made of canvas, with narrow satin ribbon.

RECIPES.

HOME MADE CHEESE.

Housewife sends the following recipe for making home-made cheese. If you are a novice in cheese-making and can obtain rennet extract, that will be best, because it is always sweet and uniform in strength, and is accompanied with directions for using. But if this cannot be had steep a good sweet rennet in weak brine for at least two days in advance of the time it is required, and give it several good rubbings, so as to extract the strength. Strain the night's milk, and set it where it will keep cool and sweet. If the cream is required for butter, it can be removed in the morning, and the milk placed in the cheese-tub, in which also must be placed the morning's milk. Heat the morning's milk sufficiently to raise the temperature of the whole to 92 or 94 degrees. Next add rennet enough to cause coagulation to begin in about fifteen minutes. The exact quantity of rennet can only be determined by experiments. When the curd is hard enough to split with a clean fracture before the finger as it is passed along, it should be cut in blocks, say two inches square, and allowed to settle for ten or fifteen minutes. During this time the whey will form. Then gently break the curd with the hands and let it remain another fifteen minutes. At the expiration of this time dip off a portion of the whey and heat it, being careful not to scorch it. Gently lift the curd again and break into several pieces; do not miss any part. Add warm whey until the mass reaches a temperature of 98 degrees. The curd should be broken and stirred while the whey is being added. The mass remains some little time, when it must be stirred up again. This process to be continued until the curd is firm, so that it will readily fall to pieces after being pressed in the hand. The draining process next begins. A cloth strainer is laid over the top and the whey dipped off down to the curd. Next the curd is dipped into a strainer prepared for the purpose (usually a slit-bottomed basket with a cloth strainer inside) to drain. The curd is broken up with the hands, and when nearly dry salt is added at the rate of about four ounces to ten pounds of curd, the whole mixed thoroughly, and then put to press. In two or three hours it is turned and replaced in the press. Next morning the cheese is taken out and rubbed with a little melted butter. It should be turned and rubbed every day until it is cured.

POTATO PUDDING.

Boil four large potatoes, and pass them through a sieve; stir into them powdered loaf sugar to taste, and the yolks of two or three eggs; add a few drops of essence of lemon: then the whites of the eggs whisked to a froth; mix quickly and well; pour into a plain mould buttered and breadcrumbed, and bake for twenty minutes in a quick oven.

GREENGAGE MARMALADE.

When the plums are thoroughly ripe, take off the skins; weigh, and boil them quickly, without sugar, for 50 minutes, keeping them well stirred; then to every four pounds add three of good sugar reduced quite to powder; boil the preserve from five to eight minutes longer, and clear off the scum perfectly before it is poured to be put into the jars. When the flesh of the fruit will not separate easily from the stones, weigh and throw the plums whole into the preserving-pan, boil them to a pulp, pass through a sieve, and deduct the weight of the stones from them when apportioning the sugar to the jam. The Orleans plums may be substituted for greengages in this recipe. Greengages stoned and skinned, six pounds, 50 minutes. Sugar, four and one-half pounds, 5 to 8 minutes.—Mrs. Hale's New Cook Book.

BEEFSTEAK ROLLS.

Cut a very thick steak into pieces three inches long and two inches wide; rub the inside with an onion cut in two. On each strip of meat lay a very thin slice of bread, buttered on both sides, and a

little smaller in size than the meat; sprinkle with pepper and salt, stick a clove in each, and roll up tightly. Tie with white cord, roll in flour and fry. When done remove the cord and serve with brown gravy or tomato sauce.

CHOCOLATE PUDDING.

Mix the yolks of six eggs with one cupful and a half of sugar and fifteen tablespoonfuls of bread crumbs, then a quart of boiled milk; take eight tablespoonfuls of grated chocolate, mix with a little boiled water, and pour into the mixture; the whites of three eggs are to be well beaten and added last, with a very little salt; bake one hour, beat the remaining three whites into a stiff froth; and icing sugar sufficient to make a meringue, and dry without browning.

CHICKEN RISSOLES.

Mince or chop very finely some remnants of roast or boiled fowl free from skin; add an equal quantity of truffles all minced; toss the whole in a saucepan with a piece of butter, mixed with a pinch of flour; add pepper, salt and nutmeg to taste, as well as a little minced parsley; stir in off the fire the yolks of one or two eggs beaten up with a few drops of lemon juice, and lay mixture on a plate to cool. Make a paste with some flour, a little water, two eggs, a pinch of salt, and two or three of sugar; roll it out to the thickness of a penny piece, stamp it out in round pieces three in diameter; put a piece of the above mince on each, then fold them up, fastening the edges by moistening them with water. Trim the rissoles neatly with a fluted cutter, diy each one in beaten-up egg, and fry a golden color in hot lard.

THE BEST DRIED YEAST.

One dozen potatoes; three handfuls of hops; five quarts of water. Wash the potatoes clean but do not pare them. Put them on to boil with the hops and water, and boil one and one-half hours. Mash the potatoes well in with the hops. Put one quart of flour in a crock and pour the mixture boiling-hot through a sieve on the flour. Stir it well, and when milk-warm add one pint of good yeast. When light take two-thirds corn meal and one-third flour, pour the yeast in, stir it around well, spreading on a table to dry. It never fails, and will keep six months.

CHICKEN AND CORN, (MARYLAND FASHION.

You want fresh corn; cut off the grains from the cob and put it in a pan with only enough water to cover it; stew thoroughly; cut the chicken up and add to the corn; season with pepper and salt, and when the chicken is tender add a teacupful of cream, thicken with a very little flour or cracker dust and butter. At the very last, chop parsley fine and mix thoroughly. A variation from is to stew with the corn an equal weight of pickled hard crabs. Even better, soft-shell crabs cooked with chicken and corn used to be one of the choice dishes of Maryland.

MUSHROOM CATSUP.

This is a good time to make your catsup. Such large mushrooms as are not fit for cooking alone do very well. Cut them all up fine, and to every pound of mushrooms add a tablespoonful of salt; put away for 24 hours in a cool place, and drain off the juice, using pressure; boil this juice with three cloves and half a dozen peppercorns, and let it boil slowly; strain carefully, when cold, and add to each pint of fluid a wineglassful of sherry; must be stoppered carefully; if not salt enough, add salt.

DRIED MUSHROOMS.

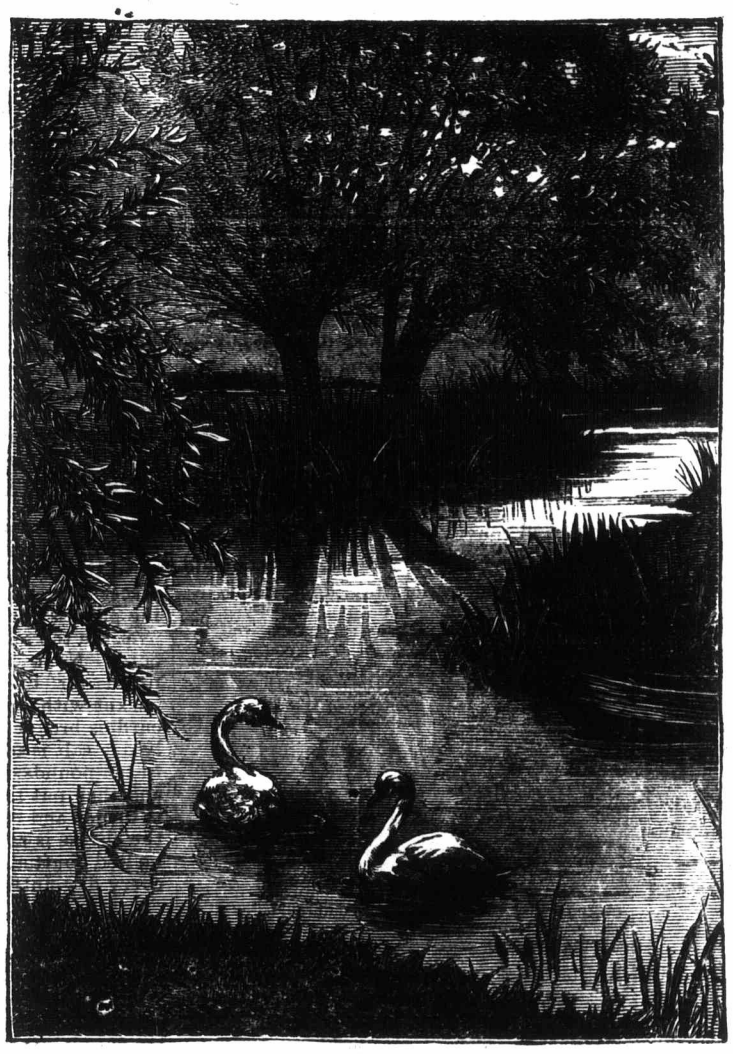
Nothing is more agreeable in dishes than a dried mushroom. I make mine this way. Nothing so easy, I pull out the stalk and lay the umbrella part down in a pan, which I put in a not too hot oven. It stays there a quarter hour; you cannot do it at once. Next day put mushroom back, and so on little by little till dry. Must be like leather when done. Soak in water when you use dried mushroom.—BLANCA C.

By the Lake.

About the lake the pansies blow,
Fair they bloom in the summer sun,
With violets on the banks below
And tangled vines that at random run;
The water is dark, and cool, and green;
Its surface touched by misty rays
That slant the willow boughs between
On sunny, summer days.

Across the lake the winged seeds
Hither and thither lightly flaunt,
Blown from the shore of bristling reeds
That gauzy dragon-flies love to haunt;
The shallows all are thickly set
With lily-leaves and blossoms white,—
Their fragrant petals glistening wet
With dewdrops, diamond bright.

A silence reigns upon the air,
Upon the pansies by the shore,
Upon the violets pale and fair,
Upon the willow bending o'er;



"SAVE WHEN THE SWANS GLIDE TO AND FRO."

The reeds and lilies silent grow,
The dark, green waters silent sleep,
Save when the swans glide to and fro,
Or silvery minnows leap.

Real enjoyment can be added to life by simply studying Nature's laws in regard to food, and by applying them to every day life.

For gad fly, bore holes in logs with a two-inch auger, and keep them filled up with good pine tar; on this tar, salt the sheep. The sheep come for their rations of salt and get their noses smeared with the tar.

Drops of foam or froth-liked spittle are frequently observed on deciduous trees, shrubs and herbage. These are caused by the larva of the spittle insect, which sucks the juices of the plant and afterwards ejects them in the form of small bubbles. The larva lies underneath the froth; but when about to change it leaves this covering, the skin splits open, and the perfect insect makes its appearance.

Hygienic Information about Food.

The quantity of food actually needed by the body depends on the amount of muscular and outdoor exercise. Persons who have a strong constitution, a healthy stomach, and take much exercise, can eat and digest almost anything with impunity, but what is good for one is hurtful to another. One stomach should not be made the rule in regulating others, and every one should experiment, and observe the effects of various articles of food upon them, and deduct one after another, until they learn by experience which is the best for digestion. The most unhealthful kinds of food are those which are made so by bad cooking, such as sour and heavy bread, cakes, pie-crust, and other dishes consisting of fat mixed and cooked with flour.

Articles to be fried should be immersed in boiling fat; they can then remain as long as necessary to thoroughly cook them, without soaking in fat. Fried meats are indigestible if greasy.

Butter, if rancid or melted, also high seasoned food, are very unwholesome. Meat when salted loses much of its nourishment, which is extracted; two gallons of brine in which meat has been saturated will yield one pound of solid extract or nourishment, which is generally wasted. The meat is wholesome used occasionally, but freelyused causes scurvy, scrofula, etc. Cream is nourishing, but on account of its fatness, difficultof digestion.

Sugar is a constituent of every article of food. Children could not live without it; it is fattening, but its immoderate use destroys health and appetite; it is heating, and, like starch, consists only of carbon and water. Insects, called sugar mites, inhabit brown sugar.

Articles needed by the body for fat and heatmaking, are sugar, fat butter, oil and molasses. For muscle, lean meat, cheese, oat-meal, beans and peas. For brain and nerves, unbolted flour, barley, eggs, very active fishes and birds. Green vegetables, fruit and berries, furnish acid and water needed.

A diet containing carbon, such as articles for fat and heat-making, is needed for cold weather. It acts as fuel and the supply should vary according to the supply of oxygen in the air breathed, the cooler the purer, and contains also more oxygen. Greenlanders live upon oil, eighty per cent. of which is carbon. Such food would destroy natives of warm climates. A portion of the carbon obtained from food, meets in the lungs with the oxygen, supplied by the atmosphere, causing combustion and heat for the body.

Animal food is quicker, and more easily digested than any other; but it produces plethora and inflammatory diseases if immoderately used; mutton is the most digestible and nutritious—beef more suitable for hard work.

Nourishment in beans, 92 parts; wheat, 85; rye, 80; meat 35; potatoes, 25.

Rye meal has a laxative tendency, often becoming acrid in the stomach; vegetables often cause flatulency in some persons.

Sago is the pith of a palm tree. Tapioca is is obtained from the root as a plant, which in its raw state is poisonous, but it is destroyed by heat in its preparation for market—both are healthy and very nourishing.

Soups are bad for weak stomachs, difficult of digestion, too much liquid, more bulk needed. Cheese is all nutriment, hard of digestion, eaten in in small quantities; a working man can subsist on one half-pound of it, one pound of meal, and one quart of milk daily; they contain every constituent element needed by the body.

Graham flour contains more fat aud muscle material, and nearly three times as much bone and teeth material as fine flour; this unbolted flour boiled and thinned with milk, is excellent for young children and adults.

Oat meal is very strengthening food when well cooked, contains much nutritive matter, twice as much as beefsteak; being oily disagrees with some persons.

Commercial.

FARMER'S ADVOCATE OFFICE,
London, July 28, 1880.

WHEAT

Has ruled very dull and quiet the past month, so much so that there has been very little done except what has been done by millers, but all they are doing is only for immediate wants. Prices are still settling down and likely to do so still more. How far they may come down yet, and what will be the basis on which a good export demand may be expected, is a question which it is hard to arrive at. A good deal will depend on the English and European harvest, which, on the whole, promises well, but the English and part of the continental crop is still to be cut. Latest English advices say that the harvest will be a late one, although promising well. A late harvest in England means a precarious one, and will not commence till after the middle of August, and possibly later, so that a good deal of interest will be centered on this fact for the next few weeks. Some American statisticians have gone so far as to estimate the amount of wheat that America will have for export, and also the amount that England and the continent will want the coming year. From these figures they calculate that there will be 100,000,000 bushels more wheat in America than will be needed. How far they are right or wrong time only will tell. In fact we think such figures are mere nonsense. We had a pretty good illustration of that the past winter and spring.

We cannot help thinking, notwithstanding all these figures, that all our wheat will be wanted at fair paying prices to the farmer. Farmers on the whole will have a good and large yield of wheat, and they should be satisfied to market their wheat and take the current value for the same.

BARLEY

Promises well, but we fear some of it will be colored by the frequent showers we have been getting lately.

PEAS.

There has been a small acreage sown this season, and so far are looking very well. It is too early to form an opinion as to what extent the bugs have been at work. It is a pity this pest could not be exterminated for a time at least.

OATS

Promise an abundant crop, but will be hard to out, owing to the severe storms we have had.

CHEESE

Has been fluctuating a good deal the past month, and has surprised a good many in the trade. In spite of the heavy shipments from this side to England the stocks there are, as per last mails, very light, and every thing was being picked up as fast as offered.

The shipments of cheese from New York, for the week ending on the 24th, was about 120,000 boxes. To this may be added 30,000 boxes via Montreal and Boston, so that the cheese shipments for said week will be about 150,000 boxes and about 25,000 packages of butter. This amount of cheese and butter will represent over $1,000,000.

The make in Canada has been good and the yield heavy, so far the weather throughout Ontario being unusually favorable for these products. Factory men, too, have taken a sensible course, and have sold out close to the hoop right along. This has the effect of keeping the market clear of poor and off-flavored goods, and makes the prospects for the fall trade that much better. Dairymen have every reason to be satisfied with the trade so far this season, and those who were so ready to drop it and try something else, will now wish they had remained at the old trade.

BUTTER

Has been closely bought up, and there is very little, if any, stocks in grocers and first hands. As near as we can learn, this butter has, to a large extent, gone forward, leaving the coast clear for the late summer and fall trade. Stocks of butter as well as cheese are light in England. The Irish and French make is said to be somewhat light.

London Markets.

London, July 31, 1880.

A very large market of farm and garden products. In grain several loads of wheat went at an advanced price of 2c to 3c.

GRAIN.

	Per 100 lbs		Per 100 lbs
Deihl Wheat.	$1 50 to 1 67½	Barley	80 to 1 00
Treadwell..	1 50 to 1 67½	Peas	80 to 1 00
Clawson	1 50 to 1 67½	Oats	1 05 to 1 10
Red	1 50 to 1 67½	Rye	80 to 90
Spring	1 40 to 1 75	Corn	90 to 1 00

PRODUCE.

Butter, crock.	18 to 22	Potatoes, bag.	50 to 60
do roll..	14 to 15	Apples "	40 to 50
do keg..	15 to 18	Turnips, p bu.	25 to 30
do inferior	8 to 15	Beef, per qr..	3 00 to 5 00
Eggs	12 to 14	Mutton, lb	7 to
Carrots, p bu	15 to 30	Lamb	7 to 8
Onions, bush.	75 to 1 00	Wool	26 to 27
Beef, per qr..	3 00 to 5 00	Dressed hogs, per 100 lbs.	5 00 to 6 00
Veal, per lb..	4 to 6	Live hogs, do	3 75 to 4 00
Honey	25 to 30	Lard	10 to 11
Cordwood	4 00 to 4 00	Geese, each ..	40 to 60
Ducks	50 to 60	Turkeys " ..	75 to 1 00
Chickens, pr..	40 to 50	Milch cows.	26 00 to 40 00
Cheese, lb	8½ to 9½		

HAY AND STRAW.

Hay, per ton	8 00 to 9 00	Straw, per load	2 00 to 2 50

FLOUR.

Flour, fall wht.	3 00 to 3 00	Oatmeal	3 00 to 3 50
" mixed..	2 75 to 2 75	Cornmeal	1 75 to 1 75
" spring..	2 75 to 2 75	Bran, per ton	12 00

Montreal Market.

Montreal, July 31.

Flour—Receipts, 2,600 lbs; sales, none reported. Market quiet, and prices nominal. Superior, $5 50 to $5 80; extras, $5 70; fancy, $5 65 to $5 75; spring extra, $5 65 to $5 75; superfine, $5 20 to $5 40; strong bakers', $6 00 to $6 60; fine, $4 70 to $4 8; middlings, $4 to $4 10; Ontario bags, $2 75 to $2 90; City Bags', $3 10 to $3 15; Wheat, W. C. Spring, $1 20; Chicago do, $1 03 to $1 06; Corn, 48c, in bond; Peas, 92c. per 66 lbs; Oats 33½c to 34c per 32 lbs; Barley, 55c. to 50c; Rye, 90; Oatmeal, $4 4 to $4 50; Butter, western, 15c to 16c; cheesing, 9c to 10c; Pork mess, $17 50; Lard, 11; Bacon, 9 to 10c; Hams, 11c to 13c.

New York Markets.

New York, July 31.—Wheat per bush., $1 08⅞ to $1 08⅞. Rye, 83c. Corn 44c to 48c. Oats, 35c to 43c. Barley, 73c. Pork, $14 37½ to $14 50. Lard, $7 65. Tallow, per lb., 6c to 7.

Chicago Market.

Chicago, July 31.—Wheat opened at 88⅜c. for Sept. Corn opens at 35⅝c for Aug. Hog market—Hogs, light grade, quoted at $4 60 to $4 80; packers', at $4 40 to $4 70; heavy shipping, $4 70 to $5 00.

Liverpool Market.

Liverpool, July 31

Flour—10s 0d to 12s 0d. Wheat—Spring, 8s 6d to 9s 4d; red winter, 10s 0d to 10s 0d; white, 9s 10d to 9s 10d; club, 9s 9d to 10s 4d. Corn, ctl, 5s 0d. Oats, ctl, 6s 2d. Barley, ctl, 5s 3d Peas, ctl, 7s 1d Pork, 62s. Lard, 39s 3d Bacon, 37s 6d to 40s. Beef, 64s. Tallow, 34s 6d. Cheese, 53s.

Toronto Market.

July 31.

Wheat—Fall, No. 1, $1 12 to $1 14; No. 2, $1 10 to $1 12. Spring, No. 1, $1 19 to $1 20; No. 2, $1 16 to $1 17. Barley, No 1, 60c; No 2 50c. Peas, No 1, 69c. to 70c.; No 2, 68c to 69c. Oats No 1, 47c; No 2, 36c. Corn, 53c to 65c; Flour, $5 35 to $5 40. Bran, $7 50 to $8 00. Hogs, street, $6 50 to $6 75. Butter, 12c to 15c. Oatmeal, $4 00 to $4 10. Wool, 27c to 28c.

Cheese.

New York, July 31.—Last week's exports, 124; 732 boxes; receipts, 131,000 boxes, with most of them has been understood to be sold for next week's steamers. Quoted—State factory, fancy, 10¼c

Utica Cheese Market—Prices quoted: 9½c, 9⅝c to 10c.

Little Falls—Sales at 9¼ to 10¼c.

Ingersoll July 29.—Prices quoted: 9 to 10½c.

British Cattle Market.

American cattle at the foreign wharves lightly on the increase. The beef trade has become depressed. Beef 6½d to 6¾d per lb; mutton 8d to 9d per lb.

LONDON.

The cattle trade was dull in tone. Supplies were not large, but were sufficient. 890 were foreign. Amongst the foreign receipts were 500 Canadian. There was a slow enquiry, and prices had a drooping tendency. The total number of sheep and lambs on offer was 12,760, of which 1,280 were foreign. The best downs and half-breeds made 7s to 7s 2d, and lambs 6s to 7s 6d per 8 lb. The total imports of foreign stock into London last week amounted to 16,984 head.

Stock Notes.

IMPORTED STOCK.—Messrs. H. & O. Sorby, of Gourock, Ont., recently purchased from Mr. Edward Tombs, of Bampton, England, one shearling Cotswold ram, one Berkshire boar and two Berkshire sows, for breeding purposes. The animals arrived at Guelph on Monday and are in fine condition. They are splendid animals.

Messrs. Conley and Whaley, of London, Ont., shipped last week 1,226 sheep by the Western Steamship Line; also 1,343 sheep, and 116 cattle by way of Montreal, per steamship Buenos Ayres; while the steamship Riversdale from Baltimore carried 135 cattle and 120 sheep. The majority of the above were purchased in this vicinity.

A London, Eng., correspondent says: As long as Canada sends us animals such as are shipped from the neighborhood of Guelph, Ont., imported by Messrs. Craig & Co., which arrived recently, she has nothing to fear from any competitor. It is not too much to say that they created a sensation, and fetched the best price in the market. No better cattle, I believe, except, of course, pedigree and prize beasts, have ever reached this country from the American continent.

An important sale of short-horn cattle took place at Chicago the last day of June. The cattle were the property of Hon. M. H. Cochrane, of Compton, P. Q., and Col. Le G. B. Cannon, of Burlington, Vermont. The Seventh and Eighth Duchesses of Hillhurst brought eight thousand dollars each. There were sold altogether thirty-two cows, averaging $995, and bringing in all $31,680. Eleven bulls were sold for $6,845, an average of $622.

The other day 150 head of fine cattle were shipped by rail from Moncton for export to England by the S. S. Grecian of the Allan Line. We are glad to see the Maritime Provinces sharing this important trade. The feed provided for these cattle was two carloads of P. E. Island potatoes. Our own exporters might turn their attention to potatoes as feed. It is worth while testing whether they are cheaper than hay.

Mr. John S. Boggs, of Avie, Strathpey, has just selected for Mr. George Whitfield, of the model stock and dairy farm, Rougemont, P. Q., 48 head of pure bred cattle of the following breeds, viz.: Polled or Angus Galloway, Highland, Ayrshire and Shetland; also some Shetland ponies, and 32 head of black-faced sheep; also 3 or 4 Herefords for Mr. Duckham, M. P. The above animals are reported to have been selected from the herds of some of the best English and Scottish breeders.

A banquet was given by the Short-horn breeders of the Blue Grass region at Winchester, Ky, on the 27th ult., and was a grand success. Every State in the Union was represented, as was also Canada. A pure Young Mary calf, two years and eleven months old, and weighing twenty-seven hundred pounds, was contributed by Mr. B. F. Vanwetter, and furnished the roast for the feast. Covers were laid for two thousand guests. The toasts were responded to by Senator Williams, Hon. J. C. S. Blackburn, Judge Jones, of Ohio; Hon. James W. Fitzgerald, of Cincinnati; B. F. Wantweter, of Winchester; J. H. Pickerell, of Illinois; ex-Chief Justice Peters, of Kentucky; Col. Driscoll, of Texas; C. E. Dowman, Commissioner of Agriculture of Kentucky; Phil. Chew, of Missouri; Claude Matthews, of Indiana; Hon. M. H. Cochrane, of Compton, P. Q., and Gen. Meem, of Virginia.

Extensive preparations are being made in Montreal for a Dominion Exhibition, to be held in September. The city council has added six acres to the grounds, valued at $10,000, and $20,000 is to be distributed in prizes.

Provincial Exhibitions and District Fairs.

CANADA.

The Industrial	Toronto, 6th to 18th September
The Western	London, 4th to 8th October
Board of Agriculture and Arts	Hamilton, Sept 20th to Oct. 4
The Southern	St. Thomas, 28th September to 1st October
Quebec	Montreal, 20th to 24th September
Prince Edward Island	Charlottetown, 12th and 13th Oct.
New Brunswick	St. John, 5th to 8th October
Nova Scotia	Kentville, September 27th to October 1st

UNITED STATES.

American Institute	New York, Sept 15th to Nov. 27th
Chicago	Chicago, Sept. 8th to Oct. 23rd
Illinois Fat Stock	Chicago, Nov. 15th to 20th
" State	Springfield, Sept. 27th to Oct. 2nd
Kentucky	Louisville, Aug 30th to Sept. 4th
Maine	Lewiston, September 21st to 24th
Michigan	Detroit, September 13th to 17th
New York,	Albany, September 13th to 17th
Ohio	Columbus, Aug. 30th to Sept. 3rd
St. Louis	St. Louis, October 4th to 9th

The Industrial Exhibiton of Toronto opens the list of this year's programme of fairs. The prize list is a fine one, namely, $23,000, of which $10,000 is offered for agricultural products and cattle. Various attractions are liberally encouraged. They have the finest agricultural buildings in Canada. The great convenience of water and rail communication offer facilities to a very large attendance of visitors. See advertisement.

The Western Fair, held in London, always has been one of the most successful exhibitions in Canada. It offers attractions quite equal to any previous exhibition. A day spent at either of these exhibitions conveys to the minds of the young and old a vast amount of useful information. Both of these Societies have courteous and attentive Directors that look after the interest of exhibitors and visitors. They devote their time and energies fully to the interest of the exhibitors.

Michigan Lands for sale or exchange. Send stamp for circular. Douville & Giesman, Real Estate Agents, Manistee, Mich., U. S. A.

The attention of our readers is directed to the advertisement of H. G. Charlesworth & Bro. Some good stock for sale; also Shepherd pups from imported stock.

A very apparent mistake was made in the July number, page 146. In quoting a portion of Prof. Johnston's speech, which he delivered at Port Stanley, instead of saying, "a loss of $150 on the one hundred and fifty acre farm," we should have said, "a loss of $300 on the one hundred and fifty acre farm.

Messrs. L. D. Sawyer & Co., of Hamilton, Ont., have had this season a very large sale of their well known Mowers and Reapers. A few days ago they had only some 20 machines on hand. The demand for their make of threshing machines is so great that it is almost impossible to meet it, and in some instances the finishing touches of the painters have had to be given to them after they were loaded on the cars. They have had a large increase in the number of machines ordered that are to be driven by agricultural engines. They have made a shipment of their celebrated Bradley Harvesters to Victoria, British Columbia. Altogether this firm have had a very large and satisfactory year's business, and the fame of the implements turned out by this firm continues to spread.

T. B. C., Yarmouth, N. S., sends the following crop report:

Hay, owing to dry weather, will not be as good as last year; an average crop. Potatoes are looking very fine. Wheat—planted in larger quantities this year than ever before in this county; is looking splendid. I have some samples of straw four and a half to five feet high. Spring wheat planted about first of May with good head.

Since the opening of navigation, the steamships of the Allan Line have carried to Britain 2,488 head of cattle, and 1,041 sheep. As there are five or six other lines of steamships sailing from Montreal, all doing their share of this business, some idea may be formed of the extent to which the cattle export business has attained.

NEW ADVERTISEMENTS.

Provincial Fair

A Special Prize of $50 in Cash

is hereby offered by Thorley Horse and Cattle Food Co., of Hamilton, Ont., for competition at next Provincial Fair, to be held in Hamilton September, 1880. for the best fat ox, steer, cow or heifer of any age

Also, 100 lbs Thorley's Food for best Durham, Devon, Hereford and Ayrshire bull calf under one year.

Also, 100 lbs Thorley's Food for best pair fat sheep, any age or breed.

Special Prizes wi l be offered at the London and Kingston Fall Fairs,

All animals competing must have been fed for three months prior to exhibition on our Food, and satisfactory evidence to that effect given if required. MANUFACTORY, HAMILTON, ONT.

170-L

Incorporated 1878. Capital Stock $50,000.

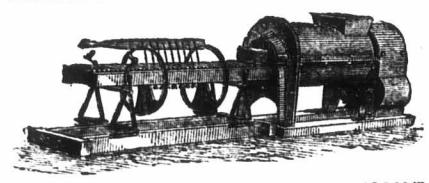
GLOBE

This shows a dwelling properly protected.

LIGHTNING ROD COMPANY.

Special attention given to the erection of Rods on Churches, School-houses, Halls, and other Public Buildings. Address all communications 494 King street east, London, Ontario. All work guaranteed. 175-c

---



FIRST PRIZE BRICK MACHINE

TORONTO AND LONDON, 1879.

FIRST PRIZE TILE MACHINE

OHIO STATE FAIR, 1879,

Over five Competitors. See Jan. No. page 8. SEND FOR CIRCULAR.

GEO. S. TIFFANY,

463 DUNDAS-ST.,

LONDON, - ONT.

171-tf.

HURRAH FOR MANITOBA

Excursion Trains for Manitoba

WILL START FROM TORONTO ON

15th & 29th Sept., 1880.

For parti ulars apply, enclosing 3c. stamp, to R. W. PRITTIE, Manitoba Land Office, 64 KING STREET EAST TORONTO.

171-f.

ST. GEORGE AGRICULTURAL WORKS,

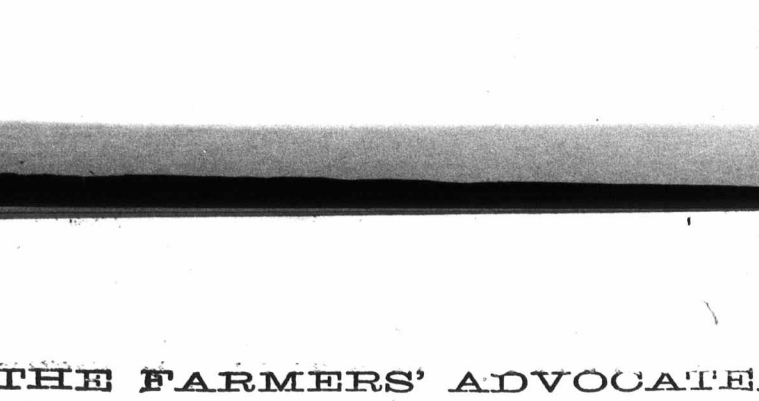
R. BELL & SON, St. George, Ont., Canada.

AMERICAN JOINTER.

PLOWS. - CULTIVATORS. - PLOWS.

The above cut represents or Chilled Iron, American Jointer Plow, with wrought-iron beam and long handles; suitable for Canadian farmers; the best stubble or cross plow in the market.

Also General Purpose, All-Steel or Hard-Iron Plows to suit all kinds of soil.



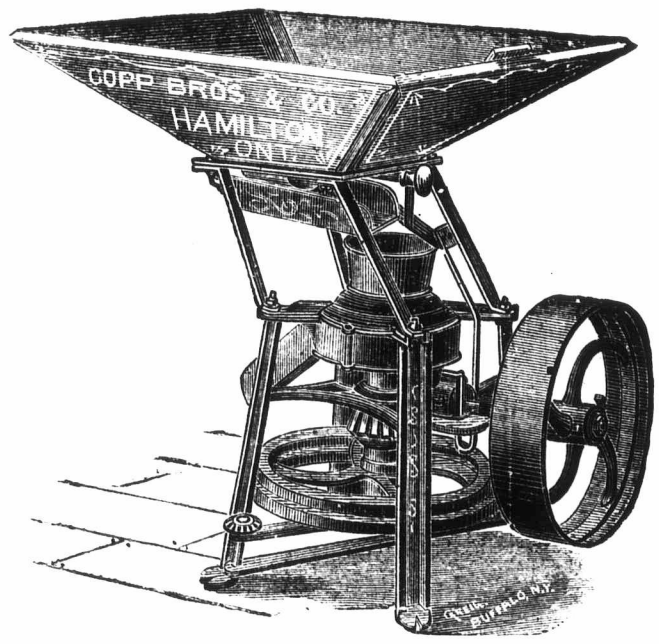
TWO-HORSE CULTIVATORS, the best in the world, with either narrow or wide teeth; a perfect thistle exterminator. Send for catalogue.

171-f

B. BELL & SON, St. George P.O., Ont.

GRAIN CRUSHER.

This is one of the most durable, perfect and simple FEED MILLS ever constructed. It can be used by one or four horse power, and if properly set will grind from 15 to 20 bushels of feed per hour.



Manufactured by Copp Bros. & Co., - Hamilton, Ont.

J. N. ANDERSON, M. D., M. C. P. S., Ont.—Eye and Ear Surgeon, 34 James-St., Hamilton, Ont.

Dr. Anderson gives **EXCLUSIVE ATTENTION** To the Treatment of the various diseases of the **EYE AND EAR**

Cross Eyes Straightened.

NOTICE TO THRESHERS

WE would advise farmers and others not to purchase until they have seen White's Improved Portable Farm Engine, made at the Forest City Machine Works, London, Ont.

These engines are licensed by all the leading Insurance Companies.

Will burn long wood, are the most powerful, and are handled with the least trouble. 175-tf

---

GOOD BOOKS

—FOR THE—

Frm, Garde ad Househ old.

Allen's (R. L. & L. F.) New American Farm Book	$2 40
American Dairying, by Arnold	1 50
American Bird Fancier	30
Allen's (L.F.) American Cattle	2 50
Barnard's Simple Flower Garden	38
" Strawberry Garden	38
Barry's Fruit Garden	2 50
Buist's Family Kitchen Gardener	1 00
Book of Household Pets, paper	50
Bommer's Method of Making Manures	25
Brill's Farm Gardening and Seed Growing	1 00
Culver's Fruit Preservers' Manual	25
Clock's Diseases of Sheep	1 25
Cooked and Cooking Food for Domestic Animals	20
Dadd's American Cattle Doctor, 12 mo	1 50
Every House Owner's Cyclopædia	3 75
Elliott Lawn and Shade Trees	1 00
Farming for Boys	1 50
Flint on Grasses	2 50
Fuller's Forest Tree Culturist	1 00
Flax Culture. [Seven Prize Essays by Practical Growers]	30
Fuller's Grape Culturist	1 50
Fuller's Small Fruit Culturist	1 50
Fulton's Peach Culture	1 50
Gardening for Pleasure	1 40
Gregory on Squashes (paper)	30
Grant's Beet Root Sugar	1 25
Gregory on Cabbages	30
" Carrots, Mangolds, &c	30
" Onion Raising	30
Guenon on Milch Cows	75
Harlan's Farming with Green Manures	50
Harris' Talks on Manures	1 50
Harris on the Pig	1 50
Henderson's Gardening for Pleasure	1 40
Henderson's Gardening for Profit	1 50
Henderson's Practical Floriculture	1 50
Hop Culture. By nine experienced cultivators	30
Hunter and Trapper	1 00
Johnson's How Crops Grow	2 00
Johnson's How Crops Feed	2 00
Johnson's Winter Greeneries at Home	1 00
Klippart's Wheat Plant	1 75
Law's Farmers' Veterinary Adviser	3 00
Our Farm of Four Acres. Paper, 30c; Cloth, 60c; extra cloth	1 00
Potato Culture—(Prize essay)	25
Pockaid's Our Common Insects	1 50
Quinby's Mysteries of Bee keeping	1 50
Quincy (Hon. Josiah) on Soiling Cattle	1 25
Quinn's Pear Culture for Profit	1 00
Roe's Manual on the Culture of Small Fruits	50
Rarey and Knowlson's Complete Horse Tamer	50
Roe's Play and Profit in my Garden	1 50
Stewart's Irrigation for the Farm, Garden and Orchard	1 50
Stewart's Stable Book	1 50
Stewart's Shepherd's Manual	1 50
Stoddard's An Egg Farm. Paper, 50c; cloth	75
Thomas' Farm Implements and Machinery	1 50
Ten Acres Enough	1 ..
Thompson's Food of Animals	1 ..
Waring's Farmer's Vacation	3 ..
Wheeler's Homes for the People	2 ..
Willard's Practical Butter Book	1 ..
Williams' Window Gardening	1 40
Waring's Draining for Profit and Health	1 50
Waring's Elements of Agriculture	1 00
Wright's Practical Poultry Keeper	2 00

Any of the above useful books will be mailed, post-paid, from the FARMERS' ADVOCATE Office on receipt of price named

---

DR. W. E. WAUGH. Office—The late Dr. Anderson's, Ridout Street, London, Ont. 169-tf